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Dear Reader,

Greetings. In a world where the awareness of health and healthcare has been growing rapidly, the field of life sciences assumes great significance. It covers a vast range of areas such as biotechnology, pharmaceuticals, biomedical technologies, biomedical devices, life systems technologies and nutraceuticals, to name a few. These are the areas which require constant innovations, supported by high standards of research and development (R&D), and their ultimate commercialization. The cover story of the current issue of Indo-Israeli Business highlights Israel's achievements in life sciences that make the tiny Middle-Eastern country a global leader in this fast-growing field. Rightly, Israel's Consul General in Mumbai Orna Sagiv, says in an article that "the future of life sciences" lies in her country. Healthcare in Israel is universal and compulsory. Besides, every Israeli citizen has a right to medical care. No wonder, the government as well as private sector companies have strived to provide affordable healthcare to the country's population. We carry a report in the Focus section of the issue, showing how healthcare is Israelis better and cheaper. ILSI-BioMed is a landmark event in Israeli life sciences calendar. This annual event, considered the biggest life sciences conference held outside the United States, attracts the world's leading companies in biotechnology and medical devices. We present in this issue full details of the event, which is being held in Tel-Aviv from 14 to 16 June, 2010. Many Israeli institutions have excelled in providing medical services. Shaare Zedek Medical Centre, affiliated to the Faculty of Medicine at the Hebrew University is a one such. We profile its achievements, especially in the field of research. The issue presents a detailed report on biotechnology in India, a sunrise sector that offers immense collaboration opportunities to foreign companies, including those from Israel. We feature in this issue how Elbit Healthcare is planning to provide specialized medical care to the needy in India. We present an in-depth study carried out by Indicus Analytics and presented by New Media, projecting India's western state of Maharashtra as a key investment destination in the country. Besides other features, the issue also carries plenty of corporate news involving mergers and acquisitions of Israeli companies in the field of life sciences.

Wish you happy reading

Satya Swaroop
Managing Editor
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Life Sciences in Israel - The Future is Here!

- Orna Sagiv, Consul General of Israel, Mumbai



Biotechnology - one of the fastest growing sectors worldwide - is reshaping our lives. New drugs are being discovered, new medical devices developed and new agricultural technologies and techniques are being deployed and put to work across the world in a way that is changing our lives. Innovative medical devices are providing breakthroughs; better diagnoses and new medical treatments are bringing faster and better relief to patients at lower cost - both to the healthcare system and to the individual patients.

Israel has become one of the world's leading innovation hubs in the biotechnology field. Home to a successful high-technology industry and a young and highly educated workforce, including a talented pool of physicians and biologists with a strong entrepreneurial spirit, Israel provides an ideal foundation for building a leading biotechnology industry. This makes the country a natural breeding

ground for biotechnology development, as well as a leader in agricultural biotechnology.

Israel has also become one of the world's leading centers for the development of innovative medical devices. It has by far the highest proportion in the world of new patents per capita in this sector. Nearly 300 companies in this field in Israel, about half of the country's Life Sciences sector, encompass a diverse range of medical disciplines, including therapeutics, diagnostics, implants, disposables and medical equipment.

Israel's Life Sciences sector is supported by a strong foundation of academic excellence, including some of the world's leading research institutes and renowned R&D facilities, such as The Technion (in Haifa) and the Weizmann Institute (in Rehovot), as well as cutting-edge medical centers. This academic excellence has become visible in the last few years: Professor Ada Yonath of the Weizmann Institute



received the Nobel Prize for Chemistry in 2009 for showing how ribosome functions, an innovation with very important implications on the development of antibiotics. Professors Aaron Ciechanover and Avram Hershko of the Technion received the Nobel Prize for Chemistry in 2004 for their discovery of Ubiquitin-mediated protein degradation, leading to breakthroughs in the understanding and treatment of diseases such as cancer, Alzheimer's, Parkinson's disease and cystic fibrosis.

In recent years Israel's medical device sector is attracting growing international attention, as well as increasing amounts of foreign direct investments. That has been achieved through VC funds, IPOs and direct investments from major US and international companies like Johnson & Johnson, Boston Scientific, Medtronic and Guidant. Indian companies have also identified Israel as an innovation hub, and Sun Pharmaceuticals have invested in the Israeli based generic company Taro.

Even in 2009, in the midst of the global financial crisis, M&A deals worth more than US \$600M were executed, including a \$300M investment by Medtronic (acquiring Ventor) and a \$120M investment by Abbot Laboratories. In 2008, J&J



invested almost \$0.5B in Israel, acquiring Omrix, and the total FDI in Israel's biotech industry in that year has topped \$1B!

Israel is home to the largest generic pharmaceutical company in the world, Teva, and the world's leading R&D centers for imaging technologies (by GE, Philips and Siemens); it is also the birth place of the digestive camera pill (by Given Imaging), the Cardiac Stent (by Medinol) and the new and innovative non-invasive ultra sound cancer therapy (by Insightec).

The Israeli government has been a major contributor to the growth of the biotechnology industry in Israel, by placing it on the national agenda and enhancing cooperation between the academia and industry, and promoting the commercialization of Israeli biotechnology innovation worldwide. The Incubator program has been serving as a successful tool in assisting small and innovative start-up companies and individuals taking their first steps in this difficult sector. Other programs assist in later stages, and the large VC community in Israel is also a major key to the industry success.

In June 2010, the BioMed Exhibition and Conference will be held in Israel. The world's leading biotechnology companies such as J&J, Roche, Teva and others will participate alongside leading Israeli Research Institutes and Technology Transfer Organizations such as Yissum, Ramot and the Technion. Also present will be many start-up companies and individual entrepreneurs.



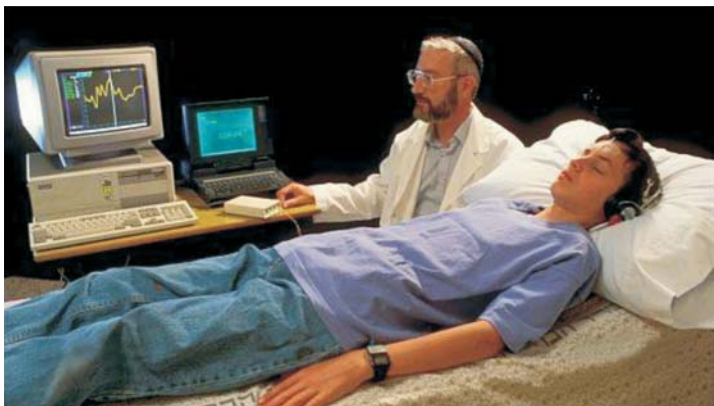
Israel: Global Leader In Life Sciences

In recent years, Israel has emerged as a leader in life sciences research. In fact, in the last decade Israel has introduced a wealth of groundbreaking and valuable innovations in Life Sciences. Israel's Life Sciences sector is supported by a strong foundation of academic excellence, including some of the world's leading research institutes, renowned R&D facilities and cutting-edge medical centers. Bolstered by a highly skilled workforce, a flourishing high-tech environment, and an entrepreneurial spirit, Israeli companies have been joined by leading multinationals in making Israel a recognized force in the Life Sciences industry worldwide. Global giants, including J&J, Perrigo, GE Healthcare, Phillips Medical, together with local companies such as Teva, itself now a multi-national company, Given Imaging, Insightec, Medinol, Disc-o-tech, Brainstorm and others have been continuously developing and marketing life-changing medical breakthroughs and innovations.

In the first half of the 1990s, Israel was home to 186 Life Sciences companies. By 2009, this number had passed 1,000. With some 80 new companies being formed each year, 41 percent of all Life Sciences

companies operating in Israel today were established during the last 5 years. In a relatively short period of time, an astounding 34 percent of these companies have already begun to generate revenue,





demonstrating that Israel has crossed the threshold from an attractive startup arena to a source of advanced commercially viable and promising businesses. The bridge connecting excellent science to revenue generating companies has been established. A rich pipeline of seed companies promises to perpetuate current growth.

Today, Israel is home to a thriving Life Sciences industry in which the major sectors are Medical Devices and BioPharma. Over the last 5 years, more companies were established in life sciences than in any other sector, with the rate of investments (including Angels, Venture Capital and Corporate) greatly outpacing all other segments of the economy.

Medical Devices

Many of Israel's innovations in Medical Devices have already been adopted worldwide. Others have been more recently introduced and are undergoing clinical trials both in Israel and other countries. The list of advances and breakthroughs cuts across many sub sectors in the Medical Devices arena.

A comprehensive image of a patient can be taken in seconds instead of minutes with the introduction of the Philips Brilliance CT scanner, developed in Israel. In the area of Medical Devices, Israel's scientists and engineers have integrated advanced technologies in electronics, communications, and electro-optics in the development of world-class innovations in digital imaging, medical lasers, electro-medical devices, telemedicine, surgical equipment, diagnostic kits, and rehabilitation equipment. According to the US Patent Office, Israel has the highest rate of registered medical device patents per capita in the world, with cutting edge innovations such as ingestible cameras, portable cardiac ultrasound systems and instant CT scanners helping to significantly improve global

health and well being while at the same time, creating significant investor value.

The largest sub-sector in the medical device arena is therapeutic devices, both implantable and disposable.

Noted Israeli Breakthroughs in the Medical devices field

Imaging

- The Pillcam, the first miniature ingested camera which diagnoses and photographs abnormalities in the gastrointestinal tract was introduced by **Given Imaging** (NASDAQ: CIVN).
- A comprehensive image of a patient can be taken in seconds instead of minutes with the introduction of the **Philips Brilliance CT scanner**, developed in Israel.

Disposable and Implantable

- The closed cell stent design which facilitates blood flow to the heart was pioneered and developed by Medinol in the early 1990's. Medinol continues to introduce additional innovations in the field of heart catheterization.
- A highly advanced and cost efficient surgical sealant or "biological glue", Quixil, which facilitates haemostasis and reduces operative and post-operative bleeding, was developed by **Omrix Biopharmaceuticals**.

Other Medical Device Technologies

- ExAblate 2000, a non-invasive surgery which uses MR guided focused ultrasound to treat uterine fibroids was developed by **Insightec**.
- A minimally invasive cryotherapy solution - the freezing and ablating of benign and cancerous tissues, thus enhancing a patient's recovery process

and comfort, was devised by **Galil Medical**.

Healthcare IT

Israel is a world leader in the utilization of IT for healthcare purposes. An astonishing 100 percent of primary care physicians in Israel use computerized patient records. With a very strong IT and Communications industry on the one hand and a highly developed national healthcare system on the other, Israel is uniquely placed to develop, test and operate new IT Healthcare products and systems. One specific area in which Israel excels is Telemedicine. More than 70 companies are involved in this sector.

Leading companies in the Healthcare IT sector include: Roshtov, a leader in enterprise medical information systems that manages patient-file oriented software solutions, Medic4All Group, which develops wireless technology for medical data transmission from the patient's environment to a monitoring center by phone or internet, web measurements viewer and a web medical file, eWave, a system integrator and software system provider that developed web-based solutions for among others electronic health record applications, and dbMotion, which provides clinicians access to real-time, integrated clinical information systems.

Cutting Edge R&D

- As a substitute for biopsies, **Incure** is completing the development of a kit that can detect cancerous cells with a simple blood test.
- A treatment using a breathing instrument to determine the patient's liver function has been introduced by **Exalenz**. The device has already been successfully tested on Hepatitis C and NAFLD (Non-Alcoholic Fatty Liver Disease) patients and is expected to be in the market soon.



- The Accordion Pill, a new approach to the slow release of medication, which provides significant benefits to both patients and drug companies, was developed by **Intec Pharma**.

- Microneedle-based systems for the painless intradermal delivery of drugs was implemented by NanoPass. **NanoPass** collaborated with **GlaxoSmithKline** on optimization of its platform for vaccine delivery.

Biopharmaceuticals

Backed by outstanding academic and research institutes (ranked three in the world by WEF 2008-9), Israel is recognized as one of the world's leaders in biopharmaceuticals, comprised of Israeli biotech and pharmaceutical companies engaged in drug discovery, stem cell research, immunology and more. Israel's pharmaceuticals and biotechnology industries have benefited greatly from each other. Biotechnology serves as a key driver for growth in the entire pharmaceutical industry: introducing new and improved products, innovative technologies, extending patent life, adding revenue streams and shortening the time to PDA approval and the market. Israel is a global leader in the number of new patents filed in biopharma, in new companies founded, and in the number of companies taken public over the past five years.

Biotechnology

The promise of new cures and the continual progress from laboratory to application keeps Israel's biotechnology industry flourishing, with novel breakthroughs and discoveries already helping millions of patients worldwide.

Within the last decade, the Israeli biotechnology sector has grown impressively, with the number of companies increasing at a rate of 17% annually. Biotechnology research in Israel is carried out at all major universities, technical colleges, research institutes and hospitals throughout the country.

Pharmaceuticals

Israel's thriving pharmaceutical industry includes some of the country's largest, most mature and profitable corporations, with more than 60 companies and over 25,000 workers.

The combination of Israeli research expertise and continued clinical progress has led to the emergence

of blockbuster drugs and promising treatments for cancer, MS and Alzheimer's disease. Home grown companies such as Taro, Dexcel/Dexxon and Rafa focus primarily on generic drug manufacturing. Ileva Pharmaceutical Industries, established in 1901 and with \$11.1 billion in annual sales (2008), is today the world's largest generic drug manufacturer and one of the 20 largest international pharmaceutical companies in the world.

Noted BioPharma Breakthroughs

Oncology

- A chemotherapy drug of the treatment for ovarian cancer, Doxil, was developed at the Hadassah Medical Center and was sold to Johnson & Johnson.

Multiple Sclerosis and Diseases of the Central Nervous System

- **Teva Pharmaceuticals**, together with the Weizmann Institute, developed Copaxone, for the treatment of Multiple Sclerosis. This drug significantly improves the quality of life for MS sufferers by reducing relapses and/or lengthening the time between them.
- Another treatment for Multiple Sclerosis, Rebif, was developed by the Weizmann Institute in conjunction with **Serono**. Rebif also has broader antiviral applications in the field of Central Nervous System disorders.
- **Exelon**, a drug for the treatment of Alzheimer's originated from research conducted at the Hebrew University and was developed and marketed by Novartis.
- Another Teva drug, Azilect, was developed together with the Technion for the treatment of Parkinson's Disease

Noted R&D Breakthroughs

Oncology

- **Can-Fite** has developed a platform technology that targets the A3 Adenosine Receptor for treatment of inflammatory, ophthalmic, cancer and viral diseases. The company's lead drugs CF101 and CF102 are small-molecule oral drugs. CF101 has shown activity in Psoriasis, Dry Eye Syndrome and Rheumatoid Arthritis in Phase II studies, while CF102, is currently being tested in two Phase I/II studies: one in hepatocellular carcinoma and the other in patients



with hepatitis C viral infection.

- **Gamida Cell Ltd.**, a world leader in stem cell expansion technologies and therapeutic products, is developing a pipeline of products in stem cell transplantation and in tissue regeneration to treat cancer, hematological, autoimmune and ischemic diseases. Its populations of adult stem cells are selected from umbilical cord blood and bone marrow, and expanded in culture. Gamida Cell's flagship product, StemEx, is now being studied as a therapy for patients with blood cancers such as leukemia and lymphoma in an international, Phase III, pivotal registration trial at leading transplant centers in the U.S., Europe and Israel. The market launch of StemEx is anticipated in 2011.

- **Vaxil BioTherapeutics Ltd.** develops novel, therapeutic vaccines for the treatment of cancer and key intracellular pathogens. Vaxil's lead therapeutic vaccine, ImMucin™ received regulatory approval to enter a phase IIA clinical trial in Multiple Myeloma patients in 2010. The company is also developing a vaccine against mycobacterium Tuberculosis (Mtb) and is entering preclinical in vivo studies.

- Two Israeli companies lead the quest to develop a stem cell therapy for Parkinson's disease. Brainstorm Cell Therapeutics uses autologous (self generated) bone marrow derived adult stem cells, while Cell Cure employs human embryonic stem cell technology. Both companies have had success in reducing symptoms of the disease in mice and rat models and will soon be ready for clinical trials. In 2007, Cell Cure was awarded significant funding from the Michael J. Fox Foundation for Parkinson's Research, for stem cell research work to cure Parkinson's disease.

Diabetes

- An oral insulin capsule, by Oramed Pharmaceuticals, a developer of oral delivery systems, has successfully undergone Phase IB clinical trials.
- Together with Yissum, the Technology Transfer Organization of the Hebrew University, Protalix BioTherapeutics, developed prGCD, a plant manufactured enzyme that serves as treatment for Gaucher disease.
- D-Pharm's DP-b99 drug to aid recovery following an acute stroke has received FDA approval for phase III trials.
- An improved prophylactic intranasal hepatitis B vaccine was developed and commercialized by Nasvax, in collaboration with SciGen of Singapore.
- Debrase Gel Dressing, a revolutionary gel for the treatment of burns by means of enzymatic action, minimizing flesh removal, bleeding, scars and the need of plastic surgeries for burn victims, was developed and commercialized by Mediwound
- Global drug company, Pfizer, acquired the exclusive worldwide license to the human gene RTP-801 discovered by QBI and molecules that modify its expression. The gene is involved in the development of pathologic blood vessels, which accelerates the progression of age related macular degeneration (AMD), the leading cause of blindness in the developed world.



Israel's Biomedical Engineering: Spotlight on Stem Cell Research

Israel's position as a world center of excellence in stem cell research is well established. Israeli scientists have been recognized among the earliest pioneers in stem cell research and have been at the forefront of global efforts to isolate human embryonic stem cells (hESC). These scientific achievements are at the forefront of medical research and upon commercialization, the resulting products will have a profound impact on countless treatments for a variety of diseases.

Ongoing Progress and Accomplishments.

There are twenty active stem cell companies in Israel, four of which are already involved in clinical trials, with one currently in Phase III.

The rapid development from research to trial is testimony to a highly supportive, regulatory environment, established in line with strict medical ethics and an impressive government grant programme.

- Among the therapeutic stem-cell technologies close to clinical trials is a procedure to reverse heart failure and another that enables diabetics to produce insulin.
- Trials to assist Parkinson's sufferers to manufacture their own dopamine and tests on leukemia victims to radically ease and improve the outcome of bone marrow transplants are in process as well.

Israel is the 2nd leading publisher of stem cell research, in absolute numbers. After the US, Israel leads the UK, Korea, China and Singapore in the number of research papers published on this subject, with 11 out of the 20 most cited papers in recent years published by Israeli authors. Three of the best hESC papers ever published in peer-reviewed journals were written by Israelis.

According to Red Herring magazine, Israel's stem-cell-oriented companies have raised a total of \$75 million over the last decade, mostly from pharmaceutical companies and venture capital firms. Forecasts for the next 10-15 years place stem cell therapeutic product sales in global markets at \$40 billion.

Much of the research and development in this groundbreaking sector is currently carried out on the

campuses of leading university hospitals in Israel, mainly at Hebrew University/Hadassah (Jerusalem) and the Technion/Rambam (Haifa). Hadassah has recently inaugurated a Human Embryonic Stem Cell Research Center, which is led by prominent figures in the field including Professors Reubinoff and Ben-Hur.

Stem Cell Research Collaborations

Local Support

The Israel Academy of Scientists and Humanities supports stem cell research in several ways:

The Genesis Consortium was created five years ago in order to create and advance a cluster of cell therapy companies in Israel that share information and aspire to acquire global leadership positions in the field, by providing generic technologies for cell therapy, stem cell derived products and new Embryonic Stem Cell lines. This initiative, supported by Israel's Ministry of Industry, Trade and Labor, is made up of leading academic institutions and industry leaders. In addition, the Ministry of Health and the President of the Academy of Sciences and Humanities created the Israel Stem Cell Research Forum (ISCRF) to advance cell therapy, research and

development in Israel.

International Partners in Stem Cell Research

Israeli research bodies have teamed up on cell therapy and stem cell projects with major research centers in the US such as UCLA, UCSD, UCSF, UC Irvine, Stanford and Cedars Sinai in California, as well as institutions in the UK, France, Czech Republic, Australia, Singapore and South Korea.

Rapid Research to Revenue

The last few years have witnessed an unprecedented wave of Israeli Life Sciences "exit" transactions with investors realizing impressive returns via IPO's, mergers and acquisitions. Approximately 35 life science companies went public on the Tel Aviv Stock Exchange (TASE) in recent years, among them BiolineRx, Biomedics, Hadasit Bio Holdings, Elutex and Nasvax, and approximately 15 Israeli companies have gone public on foreign exchanges, mainly in the U.S. According to the IVC Research Center the value of M&As and IPOs in Israeli Life Sciences companies totaled \$822 million in 2009.

TASE Listings

In recent years, the Biotechnology and Medical Device sectors have become more prominent on the Tel Aviv Stock Exchange. During 2005, TASE regulating authorities realized that life science companies have different "track records", timelines and financing requirements. In order to attract such companies - listing requirements (and costs) were changed accordingly. This subsequently led to an influx of 40 companies into the market, solving a large financing gap while providing transparency and liquidity to a wide investor audience that was not earlier exposed to this sector. Beginning in 2010, TASE will establish a new index to track biotechnology companies.

Venture Capital

Exhibiting a strong vote of confidence in the Life Sciences, venture capital investment from local and foreign VC companies amounted to \$318 million in 2008, and is estimated slightly lower at \$280 million in 2009, weighed down by the pressures of the global financial crisis. Israel's investment infrastructure also includes a range of options from University technology transfer units and incubators to bi-national funding, such as BIRD (US), SURD





(Singapore), KORIL (Korea), CURD (Canada), the European 7th Framework as well as strategic partnering and joint ventures.

Israel's Competitive Edge

Much of Israel's achievements in the Life Sciences sector stems from the fact that over 90% of the population resides within two hours driving time of each other and within close proximity to seven major universities and nearby industrial clusters that help drive the industry. This cluster effect creates economies of scale, and allows for better information sharing and synergies between the companies.

Highly Educated, Highly Skilled

50% of the population aged 25 to 34 has attained at least tertiary education, placing it 6th in the world behind among others Singapore, Japan, and Korea (IMD Competitiveness Yearbook 2009), and approximately 24% of Israel's workforce holds university degrees - placing it 3rd in the industrialized world after the USA and the Netherlands. Israel is ranked #2 in the world in terms of percentage of engineers and scientists in the work force by the IMD (2009).

Entrepreneurial Spirit and Ingenuity

The exceptional volume of Life Science startups and patents attests to the entrepreneurial and risk-taking climate in Israel. Israeli researchers and entrepreneurs overcome technological barriers and solve development problems within a short period of

time and at a fraction of the cost of some of their larger and more affluent competitors overseas.

Academia and Research

Approximately 50% of all academic research funding in Israel is in the field of Life Sciences and institutions such as the Hebrew University of Jerusalem, Tel Aviv University, Ben Gurion University of the Negev, the Technion-Israel Institute of Technology and the Weizmann Institute of Science have played dominant roles in advancing biotech R&D. In fact, according to a poll conducted by The Scientist magazine the two top International Academic Institutions in the world for scientists to conduct research in the Life Sciences in 2008 were 1. The Weizmann Institute and 2. The Hebrew University of Jerusalem. In 2009 the Weizmann Institute was ranked second. This stems from impressive levels of R&D funding and highly skilled and creative manpower which continues to generate new patents in the field.

Technology Transfer Organizations (TTOs)

Seven university-associated and 5 hospital-linked Technology Transfer Organizations (TTO) provide a valuable forum for connecting Israeli researchers and early stage projects with the industry through their commercialization efforts, investments, sponsorships and partnerships from multi-national companies eager to benefit from Israeli innovations. Israeli universities were among the first in the world to develop technology transfer organizations (TTO's) and Israel is home to the largest and oldest (over 45

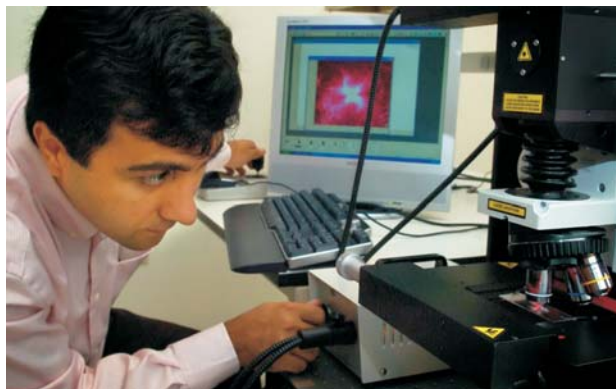
years) TTO. The Hebrew University's Yisum, the oldest and one of the largest TTOs in Israel, reported revenues of \$59 million in 2008. Yisum generates a similar output as its counterparts at MIT and Stanford, with 6,100 patents to date.

Hadasit, the TTO of Hadassah Medical Organization, has established a number of start-up companies, 9 of which have already gone public within the framework of Hadasit Bio-Holdings. Recently, one of these companies announced a new oncology treatment in the form of a drug with the potential to kill specific cancer cells directly, quickly, and efficiently and another has completed a clinical trial for the treatment of Lupus. Hadasit is currently developing an innovative drug for the treatment of strokes - eliminating current side effects and tripling the "therapeutic window".

Ramot, the TTO of Tel Aviv University, and Johnson & Johnson, recently established a joint research fund at TAU to promote projects relating to metabolic disorders such as diabetes, diseases of the central nervous system, cancer and stem cell research. Ramot has developed Organo-Boron antifungal molecules used for the topical and systemic treatment of fungal disease and has recently announced new findings in hepatitis C virus immunology. The Association of University Technology Managers (AUTM) has included two Israeli technologies among its list of the top 100 Technologies that promote world health: a novel treatment for the treatment of Alzheimer's Disease and a new anti-viral treatment with a cinnamon base, both developed at Ramot.

Yeda Research and Development Company is responsible for technology transfer from the Weizmann Institute of Science. The drug, Copaxone, a breakthrough treatment for Multiple Sclerosis, was developed at Yeda and generated annual sales of \$2.26 billion in 2008. Also at Yeda, researchers have developed CCL2, a chemokine for the treatment of inflammation in Rheumatoid Arthritis and Asthma and have identified associated genes and markers in the early detection of susceptibility to Schizophrenia. Scientists, using computer simulations, have provided an explanation as to why certain genetic diseases caused by repeats in the code are "genetic time-bombs" whose onset and progression can be accurately predicted.

The Technion Israel Institute of Technology, the largest center of applied research in the country, houses the



Technion R&D Foundation. Last year, following a \$100 million allocation, the Mann Institute for Research and Development in Biomedicine opened its doors at the university, the only Mann Institute located outside the USA. The Institute will focus on the development of knowledge created at the Technion in biomedicine, medical equipment and life sciences.

The Technological Incubator Network

The technological incubator network, with its huge repository of ideas, is a virtual "start-up machine" and a most effective tool for encouraging research and development in the Life Sciences. Totalling more than 20 throughout the country, each incubator houses up to 15 companies and provides them with a full suite of services: secretarial, legal and business development. The incubator provides funding of approximately \$500,000 for the first 2-3 years of the life of the company - when risk is highest and private funding is scarce. The program has been active since the early 1990s and 1000 companies have graduated so far, successfully raising independent, external funding.

Thanks to the success of this model, nearly all of these tech incubators once government-run, have been privatized.

Customized Research Infrastructure

Israeli Life Science leaders and investors have begun to address the specific needs and opportunities of the local market by creating unique and functional solutions. For example, having recognized the difficulties involved in attempting to commercialize small biotech projects emerging from Israeli universities, Teva, Hadasit and two leading VCs established BiolineRx in 2003. Under the guidance of an elite management team, the best early-stage projects are licensed to BiolineRx and developed

through to the second stage of clinical trials. At this more advanced stage, a product can be commercialized with a large pharmaceutical company, returning the highest ratio of value increase to investment. Furthermore, this can be achieved within five years and the variety of projects involved spreads the inherent risks associated with biotech development. BiolineRx has recently announced positive interim results from its Phase 2b clinical trials of BL-1020, a treatment for schizophrenia.

BiolineRx has screened close to 900 projects so far and its pipeline includes 15 active projects. It is traded on the Tel Aviv Stock Exchange (BLRX).

Interdisciplinary Connections

A number of Israeli achievements in Life Sciences are based on expertise developed in other disciplines and industries. Market leadership in communications technology, electronics, computer science and even advanced materials has been key to the development of innovative Life Sciences products. Medinol's original cardiovascular stents were based on principles learned in the development of metals and structures for the aviation industry.

Many advances stem from innovations developed within the defense technology industry. Given

Imaging, Galil Medical, and Topspin are just a few examples, and since cooperation works in both directions, the Rafael Development Corporation was set up to serve as a think-tank/incubator to identify and develop new medical uses for Israel's defense technologies.

Support Comes From the Government

The Israeli government is involved in various efforts to encourage global companies to increase their direct involvement in the Life Sciences in Israel. Generous incentive packages are provided to companies interested in developing R&D or manufacturing facilities in Israel.

The Law for the Encouragement of Industrial R&D, administered by the Office of the Chief Scientist in the Ministry of Industry, Trade and Labor is the principal government tool for supporting R&D. According to the guidelines, Biotechnology is defined as a Preferred Sector by the OCS.

The Law for the Encouragement of Capital Investments includes a competitive "Grants Program" administered by the Israel Investment Center and a "Tax Benefits" program administered by the Tax Authorities, both of which offer substantial advantages for foreign investors. ■

(Source: www.investinisrael.gov.il)

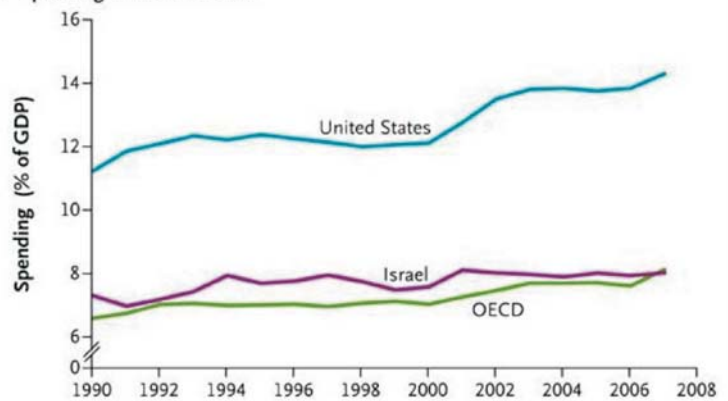


Healthcare in Israel: Better & Cheaper

President Obama's healthcare reform proposal has sparked a great debate in the United States, the world's largest market for pharmaceutical products. Not many are aware that there are countries which handle their healthcare programmes better, always cheaper, almost always with better results. And one of them is Israel.

Israel has a population of 7.2 million. Life expectancy at birth in Israel is 80.3 years, compared with 77.8 in the United States. Israel spends less than 8.0 percent of its GDP on health care. The rate in the United States is double that and rising. Yet Israel has a higher ratio of healthcare providers to

A Spending on Medical Care



Healthy Indicators: How Israel does it better than the United States. (OECD / New England Journal of Medicine)



patients than does the US, more primary care providers per person, and more clinics per person. In addition, every Israeli citizen has the right to medical care. In the US, 15 percent of the population is not covered by insurance. How does Israel do it? Here are the facts.

- On Jan. 1, 1995, Israel enacted the National Health Insurance Law, making universal care a right and an entitlement separate from an individual's income, age or employment--and health insurance mandatory.
- The system is funded through taxes on individuals and employers, and through the state's general-revenue treasury. Israel's health ministry notes that "Sources for funding of health costs include progressive health insurance premiums paid by each resident, employers' health tax payments, National Insurance Institute funds, funds from the Ministry of Health budget and consumer participation payments."
- LexisNexis' reliable International Handbook of Corporate and Personal Taxes (2003 edition) puts the employee's tax rate for health insurance at 5.93 percent regardless of income, and



employers' share at 4.5 percent to 10.32 percent of income.

- Israeli citizens are entitled to buy additional insurance coverage if they so choose.
- Israel's "sickness funds" provide coverage through systems similar to the Federal Employees Health Benefits Program or Medicare Advantage.
- There are no such provisions as denying coverage to people with pre-existing conditions, dropping the sick from insurance plans, or capping an individual's lifetime coverage at a certain sum, as is routine in the United States. Israeli health plans are required to accept all applicants or enable them to switch plans.
- Health care providers are public, private or non-profit.

Health care in Israel is both universal and compulsory, and is administered by a small number of organizations with funding from the government. All Israeli citizens are entitled to the same Uniform Benefits Package, regardless of which organization they are a member of, and treatment under this package is funded for all citizens regardless of their financial means. According to a study by the World Health Organization, Israel has one of the best healthcare programmes in the world.

Starting with the British mandate of Palestine in 1917, measures were taken to improve public health in the area. In Jerusalem, accumulated garbage heaps were removed, public trash cans were installed; the entire population was vaccinated against smallpox, and pools and cisterns were covered with mosquito repellent as part of the campaign to eradicate malaria.

Public Healthcare System

The public healthcare system in Israel was built on foundations of the system introduced during the British Mandate. Health insurance is administered by the Health maintenance organizations, most of which were set up by the labour unions before the founding of the State. These Health Maintenance Organizations are membership-based. Originally, the members paid membership fees to these funds, and received in return a set guarantee of health services.

In 1973 a special law was enacted which forced all employers in Israel to participate in the medical insurance of their workers, by means of a direct payment to the Health Maintenance Fund in which the workers were members. The duty of participation was eventually changed and diminished as part of the arrangements law of 1991.

In 1988 the government appointed a Commission of Inquiry to examine the effectiveness and efficiency of the Israeli healthcare system. The commission handed in the final report in 1990. The main recommendation of this report was to enact a Health Insurance law in Israel.

Health insurance law

In 1995 the National Health Insurance Law came into effect, which made membership in one of the four existing Health Maintenance Organizations compulsory for all Israeli citizens. The law determined a uniform benefits package for all citizens - a list of medical services and treatments which each of the Health Maintenance Organizations is required to fund for its members. Additionally, certain services were brought under the direct administration of the State, usually by means of the Health Ministry. In addition, the law set out a system of public funding for health care services by means of a progressive health



tax, administered by Bituah Leumi, Israel's social security organization, which transfers funding to the Health Maintenance Organizations according to a certain formula based on the number of members in each fund, the age distribution of members, and a number of other indices. The Health Maintenance Organizations also receive direct financing from the states money.

Before enactment the Health Insurance Law, the only Health Maintenance Organization to accept members without discrimination based on age or medical situation was the Clalit HMO which was then in the ownership of the Histadrut labour federation. After enactment of the 1995 law, membership in any of the four Health Maintenance Organizations was guaranteed for all citizens, and Israelis were given the right to transfer between Organizations once per year.

The 1995 law also imposed a system of financial and medical oversight of HMOs by the State.

In addition to the uniform benefits package provided to all citizens, which provides coverage for basic and essential healthcare, every HMO fund provides their members with the option to acquire "supplementary insurance" which includes services and treatments that are not covered by the publicly-funded system.

The four nationwide HMOs are: Clalit (the largest with about 54 percent of the population belonging to it), Kupat Holim Meuhedet, Maccabi, and Leumit.

Israel has maintained a system of socialized health care since its establishment in 1948, although the National Health Insurance law was passed only on January 1, 1995. The state is responsible for providing health services to all residents of the country, who can register with one of the four health service funds. To be eligible, a citizen must pay a health insurance tax. Coverage includes medical diagnosis and treatment, preventive medicine, hospitalization (general, maternity, psychiatric and chronic), surgery and transplants, preventive dental

care for children, first aid and transportation to a hospital or clinic, medical services at the workplace, treatment for drug abuse and alcoholism, medical equipment and appliances, obstetrics and fertility treatment, medication, treatment of chronic diseases and paramedical services such as physiotherapy and occupational therapy.

Healthcare Providers

Providers in the Israeli healthcare system consist of a mixture of private, semi-private and public entities. Generally, family and primary medicine facilities are run directly by Clalit for its members while the other HMOs operate their own family practice clinics in the larger cities and contract with privately operated family practice clinics in smaller communities. As with primary practice, Clalit tends to provide specialty and outpatient care in their own clinics while the other HMOs generally contract with outside, private care physicians and facilities for this sort of service. In addition to these, the ministry of health in conjunction with various local authorities also runs a network of public well care and prenatal and infant care clinics throughout the country. A few of the hospitals in Israel are fully private though most are public, operated by the ministry of health, while several are run by Clalit.

As the US Congress is working to reconfigure our country's health care system, many are pointing to health systems overseas as examples. Israel has one of the most advanced health care systems in the world, and rivals the United States on everything from quality to cost to coverage.

Israel's health care system has four key components: (1) universal coverage; (2) cradle to grave coverage; (3) coverage of both basic services and catastrophic care; and (4) coverage of all medications. Patients pay just a small co-payment to see specialists and to purchase medication, and primary care is free. So, Israelis seem to have it pretty good: access to all their medical needs at a nominal fee. All this costs about 8.0 percent of Israel's GDP, while the U.S. spends a



whopping 17 percent of its GDP on healthcare.

Israelis pay a healthcare tax of 4.8 percent of their incomes, and in turn they can join one of the four Israeli HMOs. Costs are contained a number of ways, including covering only procedures that make sense and electronic medical records in 90 percent of physicians offices, compared to 15 percent in the US.

According to the latest World Health Organization statistics, Israel has a life expectancy of 81, ranking in the top 14 in the world, and ranked higher than average in most categories compared to the US and Europe.

Israel's first rate doctors attend six years of university, complete a one-year internship, spend five to six years at a residency, and many go on to fellowships in other countries. The Ministry of Health issues quality-control measures to the HMOs, testing them at least twice a year.

The most important lesson to be learned is by looking at Israel's priorities in health care. They provide universal access to care while maintaining high quality and controlling costs. Sometimes this means you have to wait a little bit to see a specialist, or purchase supplemental insurance from your HMO to cover extra physical therapy sessions or a elected surgery, but the result is an overall healthier population at a lower cost.

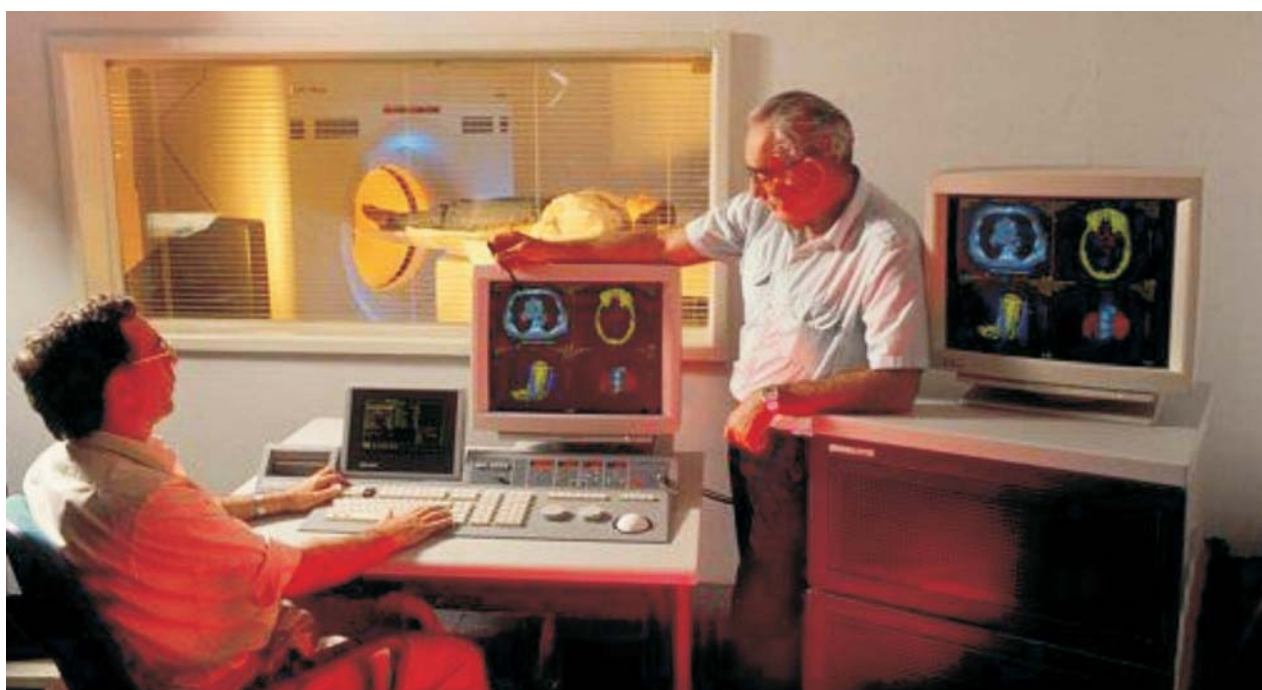
Unfortunately, right now the U.S. health care system looks very little like Israel's. Rising healthcare costs leave a growing number of people without adequate healthcare, including the nearly 50 million people who are uninsured. The availability of healthcare resources is often based on ability to pay rather than need. Finding access to quality healthcare services is difficult for many. The costs of healthcare threaten the financial health of millions of individuals and families and the long-term financial stability of our nation.

Congress has the opportunity to change this in the coming months, and I hope that they will look to Israel to understand how universal coverage doesn't have to compromise quality or cost. Senators and Representatives will return to their home states and districts during the month of August, giving you the opportunity to tell them that we need comprehensive healthcare reform this year.

Pharma Market to Touch \$1.72 billion by 2014

The Israeli pharmaceutical market, estimated to be worth US\$1.6 billion in 2009, is forecast to grow marginally in the medium term. By 2014, its value is expected to reach US\$1.72 billion at retail prices, indicating a compound annual growth rate (CAGR) of just 1.89 percent in local currency terms and 1.56 percent in US dollars.

Key factors shaping this forecast are cost-



containment measures that will negate volume increases through pressure on prices. An increasing reliance on imports of non-patented medicines will also subdue growth as the government seeks to cut healthcare costs.

Therefore, in BMI's updated Business Environment Ratings for Q210, Israel remains ranked 12th of the 17 Middle East and African (MEA) markets surveyed, down from sixth in the same quarter of the previous year.

While the country scores strongly across the country structure and the country risk categories due to its urbanized nature and developed economy, a risky regulatory environment, strong cost-containment pressures, strict reimbursement practices and the unstable political situation serve to limit Israel's overall potential.

Globally, therefore, Israel is found in the bottom third of the 71 markets surveyed by BMI for their pharmaceutical attractiveness.

While foreign players remain wary of directly investing in the country, collaborations with local players especially in the field of biotechnology are commonplace.

In fact, in late 2009, US major Pfizer and Protalix

Biotherapeutics agreed to develop and commercialize the Gaucher's disease candidate Uplyso (taliglucerase alfa), with Pfizer receiving global marketing rights (excluding Israel). Pfizer and Protalix will take a 60:40 respective share of future revenues and expenses for Uplyso. The development confirms the view that Pfizer would view a co-licensing deal with Protalix as a more attractive option than a full-scale acquisition of the Israeli firm.

On the other hand, local companies are also extending both their geographical (with domestic drugmaker Teva currently in the bidding to acquire German generics specialist Ratiopharm) and scientific reach. To this end, Israeli drugmaker Taro's first patented product for the treatment of essential tremors recently received the US Food and Drug Administration (FDA)'s Investigational New Drug (IND) exemption. Early phase clinical trials of T-2000 have been promising, particularly when the drug was used in conjunction with an existing treatment, propranolol. Around the same time, a new, Israel-developed hand sanitizer was reported to be effective against swine flu. EtoClean is developed by Novel Therapeutic Technologies (NTT), a spin-off of Yisum Research Development Company itself, the technology transfer arm of the Hebrew University (HU) of Jerusalem. ■



ILSI Biomed Israel - June 2010

Where Science, Tech & Industry Converge to do Business



The Israeli BioMed Industry's largest annual event is set to be held from 14 to 16 June, 2010 in Tel Aviv. Considered the biggest life sciences conference held outside the United States, ILSI Biomed attracts the world's leading biotechnology, medicine and medical device entities.

Set against the backdrop of the global market recovery and the recent proliferation of the life sciences field, the forthcoming ILSI Biomed Israel 2010 international conference will provide a global platform for the most prominent figures in the

participants including CEOs and senior officers of biopharma and medical device companies, scientists, researchers, entrepreneurs, venture capital fund managers and private investors.

ILSI Biomed 2010 will also welcome more than 1,000 international visitors. These estimations are based on data from the ILSI Biomed 2009 event. Despite being a difficult time for international conferences, the 2009 event brought 6,000 participants together. More than 2,500 participated in customized one-on-one meetings of which 800 were from 35 countries.



biotechnology, pharma and medical device sectors.

Known for addressing the field's most relevant and progressive topics, ILSI Biomed Israel 2010 will place special emphasis on the practical and business aspects of one of the most advanced and successful industries in Israel.

Moreover, the 2010 conference will give prominence to the cardiology, vaccines, oncology, 'cell care', personalized medication, and metabolic disease fields. The conference will serve as a platform connecting science, technology and industry, and will be accompanied by an exhibition covering the latest biotechnology and medical device innovations. The innovation pavilion will accommodate up to 60 start-up companies showcasing their products during the event at Tel Aviv's famous David Inter Continental Hotel.

According to the event organizers, the Israel Life Science Industry (ILSI) and Kenes International, ILSI Biomed 2010 will attract an estimated 7,000

Presiding over the committees are the Co-Chairpersons; Ms. Ruti Alon, General Partner, Pitango Venture Capital and Chairperson of the Israel Life Science Industry, and Israel Makov, Chairman, Given Imaging.

"Following a year of regulatory, political and economic changes, we see the upcoming 'Biomed Week' as a valuable opportunity to network with old friends and business partners and to make new connections. We aim to create a platform where participants have a chance to learn from each other and interact in a way that can lead to joint ventures, investments and other business structures. Moreover, with all the changes occurring around us, the conference is a great opportunity to be updated, analyze changes and their impact on future plans for each company and the industry as a whole," said Ms. Alon.

Makov added, "The investors, business development managers and delegations from foreign countries will

have the opportunity to meet Israeli companies within this field. I am confident the new technologies and interactions between participating companies and the thousands of visitors will generate additional leverage for the local industry."

In her invitation to potential partners, Ms. Alon said, "In no other time in recent history have political, economic and regulatory factors converged with such strength to affect major change in healthcare systems worldwide. The financial crisis has exacerbated realities faced by governments and healthcare providers, and accelerated changing trends."

She further added, to address this issue, the ILSI Biomed 2010 Conference will focus on:

- The role of innovation, its source - industry or academia? Who will pay for it - venture capital or large medical and biopharma companies?
- Regulatory changes and their impact on innovation
- Does personalized medicine mean smaller target markets?
- Who is better suited to commercialize future "niche" products? Large players or innovative fully-integrated companies. How would it impact business models?

"We will take a closer look at cardiology, vaccines, oncology, cell therapy, personalized medicine, metabolic diseases and aesthetic medicine markets. All these discussions will serve as background to the

presentations given by 60 or so Israeli medical device and bio-pharma companies," Ms. Alon said.

Asking the participants to join Israel's vibrant life science community at the conference, she described the event as an occasion where science, technology and industry leadership came together.

"Connect with old and new friends, explore business relationships and learn about the future of healthcare through a variety of panels on hot industry topics and trends, world-class speakers, and high-quality networking opportunities. Join top-notch industry executives, Israel's most innovative medical device and BioPharma entrepreneurs, major pharmaceutical companies, life science research leaders, policy makers and internationally prominent industry investors," Ms. Alon said.

ILSI Biomed 2010 follows the success of previous annual conferences: the 2009 event drew 6,000 industry players, engineers and scientists, with 800 participants from 35 countries and in excess of 2,500 one-on-one meetings.

"We will continue our tradition of keynote speeches and plenary sessions given by industry leaders and leading academicians, worldwide. We will continue in our successful tradition and offer one-on-one partnering sessions and an extensive exhibition area," Ms. Alon added. ■

 <h2>Preliminary Program</h2>	
SUNDAY, JUNE 13, 2010	
All Day	Seminar: INNOVATIONS <i>By Cleveland Clinic and ILSI</i>
MONDAY, JUNE 14, 2010	
09:00-10:00	Opening Ceremony
10:00-10:40	Keynote Lecture: <i>Chris Viehbacher, CEO, Sanofi-Aventis, France</i>
10:40-10:50	Interview by: <i>Francois Maisonrouge, Senior Managing Partner, Evercore Partner, USA</i>
10:50-11:40	Keynote Lecture: <i>Robert Huffines, Co-Head of Global Healthcare Investment Banking, J.P.Morgan, USA</i>
11:40-12:10	Coffee Break

12:10-14:10	Breakout Sessions			
	Company Presentations: MEDICAL DEVICE	Company Presentations: BIOPHARMA	Seminar: VACCINE	CARDIOVASCULAR THERAPY IN THE 2020 (Cont) Dr. Francesco Maisano, Dept. of Cardiovascular & Thoracic Medicine, Istituto Scientifico San Raffaele, Italy Dr. Michael J. Mack, Director of Cardiovascular Surgery, Baylor Healthcare System, Director of Research, The Heart Hospital Baylor Plano, USA Dr. David L. Brown, Founder and President, The Heart Hospital Baylor Plano, USA Prof. Friedrich Wilhelm Mohr, Herzzentrum Universitaet Leipzig, Germany Dr. Joe Smith, VP, Emerging Technologies Corporate Office of Science & Technology, Johnson & Johnson, USA Dr. Bryant M. Moore, Vice President, Research & Technology, Medtronic, New Therapies & Diagnostics, USA
			Moderator: Dr. Ronald Ellis, Senior Vice President & Chief Technology Officer, NasVax, Israel	
			Panel Discussion: Dr. Heather L. Davis, Executive Director, Pfizer Global Research & Development, Vaccines Research, Canada Dr. Sohail Ahmed, Head of Clinical Sciences Unit (Translational Medicine), Novartis Vaccines & Diagnostics, Italy Dr. Nathalie Garçon, Vice President, Head of Global Adjuvant Center for Vaccine Development, GlaxoSmithKline Biologicals, Belgium Dr. Jim Tartaglia, Vice President, Research & Development, Sanofi-Pasteur, Canada	
14:10-15:10	Lunch Break			
15:10-15:50	Keynote Lecture: Dan Zabrowski, Head of Pharma Partnering, Roche, USA			CARDIOVASCULAR THERAPY IN THE 2020 (Cont)
15:50-16:00	Interview by: Francois Maisonrouge, Senior Managing Partner, Evercore Partner, USA			
16:00-16:20	Coffee Break			
16:20-18:20	Breakout Sessions			
	Company Presentations: MEDICAL DEVICE	Company Presentations: BIOPHARMA	Seminar: STEM CELLS	CARDIOVASCULAR THERAPY IN THE 2020 (Cont.)
			Panel Discussion	
19:00-21:00	ILSI GALA EVENING			
TUESDAY, JUNE 15, 2010				
07:30-09:00	Breakfast Session <i>(Pre registration required - limited seating)</i>			
09:00-09:50	Moderator: Dr. Karen Bernstein, Chairman & Editor-in-Chief, BioCentury Publications Inc., USA Panel Discussion: Dr. Ron Cohen, President & CEO, Acorda Therapeutics, Inc., USA Dr. Jeremy M. Levin, Senior Vice President, Head of Strategic Transactions Group, Bristol Myers Squibb, USA Paul Sekhri, Head, Biotech Ops Group, TPG Biotech/TPG Growth, LLC, USA			
09:50-10:30	Keynote Lecture: Stephen Ubl, President & CEO, AdvaMed, USA			
10:30-10:40	Interview by: David Cassak, Elsevier, USA			
10:40-11:10	Coffee Break			

11:10-13:10	Breakout Sessions				
	Company Presentations: MEDICAL DEVICE	Company Presentations: BIOPHARMA	Seminar: METABOLIC DISEASE	Technology Transfer Session	Seminar: eHEALTH SOLUTIONS
			Moderator: Dr. Karin Hehenberger , <i>Senior Vice President for Strategic Alliances, Juvenile Diabetes Research Foundation International - JDRF, USA</i>		Moderator: Tamar Howson , <i>JSB Partners, USA</i>
			Panel Discussion		
			Barry Greene , <i>President & Chief Operating Officer, Alnylam Pharmaceuticals, USA</i>		
13:10-14:10	Lunch Break			Lunch Session (Pre registration required - limited seating)	
14:10-15:00	Keynote Lecture: A SMARTER HEALTHCARE SYSTEM, A CATALYST FOR INNOVATION Katherine C. Holland , <i>IBM General Manager, Global Life Sciences Industry, USA</i>				
15:00-15:50	Keynote Lecture: Dan Mendelson , <i>President and Founder, Avalere Health LLC, USA</i>				
15:50-16:20	Coffee Break				
16:20-18:20	Breakout Sessions				
	Company Presentations: MEDICAL DEVICE	Company Presentations: BIOPHARMA	Seminar: PERSPECTIVES ON PERSONALIZED MEDICINE	Technology Transfer Session (Cont)	
			Moderator: Dr. Edward Abrahams , <i>Executive Director, Personalized Medicine Coalition, USA</i>		
			Panel Discussion:		
			Dr. Felix Frueh <i>Vice President, R&D Personalized Medicine, Medco Health Solutions, Inc., USA</i> Dr. Rowan Chapman <i>Mohr Davidow Ventures, USA</i> Dr. Stephen L. Eck <i>Vice President, Translational Medicine & Pharmacogenomics, Eli Lilly & Company</i> Dr. Ralph Snyderman <i>Chancellor Emeritus, Duke University, USA</i>		
WEDNESDAY, JUNE 16, 2010					
09:00-09:40	Keynote Lecture: NANOTECHNOLOGY ENABLES INDIVIDUALIZED MEDICINE Prof. Mauro Ferrari , <i>Professor & Chairman, Department of Nanomedicine & Biomedical Engineering (nBME), Professor of Internal Medicine, Division of Cardiology, University of Texas Health Science Center, USA</i>				
09:40-09:50	Interview by: David Cassak , <i>Elsevier, USA</i>				
09:50-10:30	Keynote Lecture: Dr. Harlan F. Weisman , <i>Chief Science and Technology Officer, Medical Devices & Diagnostics, Johnson & Johnson, USA</i>				
10:30-10:40	Interview by: David Cassak , <i>Elsevier, USA</i>				
10:40-11:00	Coffee Break				

11:00-13:00	Breakout Sessions			
	Company Presentations: MEDICAL DEVICE	Company Presentations: BIOPHARMA	Seminar: ONCOLOGY	Seminar: MEDICAL DEVICE AND BIOPHARMA - REGULATION AND REIMBURSEMENT IN EUROPEAN MARKETS
			Panel Discussion: Dr. Rachel Humphrey, Vice President of Development, Bristol-Myers Squibb, USA	
			Dr. David P. Schenkein, CEO, Agios Pharmaceuticals, USA	
13:00-14:00	Lunch Break		Lunch Session (Pre registration required - limited seating)	
14:00-14:50	Keynote Lecture			

List of Israeli Companies Participating in Biomed Event

- **AIT - Applied Immune Technologies Ltd:** AIT is developing novel immunotherapeutic approach to Oncology which creates unique human monoclonal antibodies that mimic the ability of TCR to recognize intracellular antigens in the context of MHC.
- **AMIT - Alfred Mann Institute at the Technion Ltd:** Alfred Mann Institute at the Technion (AMIT) is a company focused on development and commercialization of biomedical innovations from the Technion.
- **B.G Negev Technologies:** Pharmaceuticals and Drug Delivery Biotechnology and Biomaterials Medical Diagnostics and Medical Devices Nanotechnology Chemistry and Chemical Processes.
- **BioCep Ltd:** BioCep has developed an improved cell separation method enabling rare cell isolation. BioCep will develop novel applications on its platform including non-invasive prenatal diagnosis, disease management and stem cell therapies.
- **Bio-Impedance General Ltd:** Non-invasive continuous blood glucose monitoring, using Bio-Impedance technology.
- **Bioforum CDmC Ltd. (Bioforum Group):** BioForum CDmC offers a complete range of clinical data management and biometric services for clinical trials in pharmaceuticals and medical device development.
- **Biolmage - MRI research & consulting:** Biolmage provides MRI research services for pre-clinical and clinical pharmacological biomedical evaluation, offering a tailor-made full package of MRI research services including protocol design, acquisition, analysis and biological interpretation.
- **BioJerusalem:** An initiative of the Jerusalem Development Authority, BioJerusalem aims to boost the development of the life sciences industry in Jerusalem by leveraging the vast biomedical resources available in the city.
- **Biolinerx:** The Company's programs are for schizophrenia and treatment of damaged heart tissue post-myocardial infarction. Products under development include compounds for the treatment of cancer, cardiovascular, metabolic, infectious and autoimmune diseases.
- **Biological Industries Co.:** Biological industries Ltd. is a manufacturer of products for animal cell culture and molecular biology with over 25 years of experience. The company exports to 35 countries worldwide.
- **BioRap Technologies:** BioRap Technologies is the tech-transfer company of the Rappaport Biomedical Research Institute at the Technion. BioRap is offering collaboration opportunities in commercialization of inventions in healthcare and biomedicine.
- **BioSpiral:** Minimally invasive thermodynamic system that uses cooling and heating technologies for the treatment of breast and prostate cancer in outpatient settings.
- **Carticure:** Proprietary tissue-engineering solution for repairing cartilage defects through implanting genuine hyaline cartilage.
- **Cato Research Israel Ltd.:** Cato Research provides a broad range of personalized services related to drug development. Our services are suited to the needs of established and young pharmaceutical, biotechnology and medical device companies.
- **Capsutech:** Novel nanomaterials delivery and targeting platform for anti-cancer drugs.
- **CTTI- Clinical Trials Teva Israel:** A full-service CRO, Operated within Teva Pharmaceutical Company in Israel since 1989. Over 250 clinical studies conducted in Israel ranging from Phase I to IV, expertise in various therapeutic areas.

- **Da-Ta Biotech Ltd.:** Da-Ta Biotech provides cell-based assays for the biotechnology industry. The company serves as a beta site for R&D companies involved in drug, device or diagnostic assays development.
- **Flourinex Active:** Technologies for long term prevention of tooth decay (CE clearance and sales) and for long lasting aesthetic tooth whitening (FDA clearance).
- **GCP Clinical Studies Ltd.:** A leading Israeli provider of clinical research services and educational programs (CRO). Offering a full range of services to support, facilitate and manage the clinical research process, locally and internationally.
- **GeneArrest:** Platform for development of DNA and RNA targeted pharmaceuticals, with applications for genetic diseases, molecular research, new antibiotics, biological drug targets
- **Headway Ltd.:** Headway has developed Occiflex™ - innovative, computer-controlled medical device, which acts as a robotic physiotherapist, for use in the pain and rehabilitation fields, for treating head and neck pain patients.
- **Intramed Systems Ltd:** Intramed's Impress(tm) System offers an effective and reliable intramedullary limb elongation solution in a \$1.5B market. The Impress(tm) is positioned as the clinical and aesthetic market's product of choice.
- **Inter-Lab Ltd, An affiliate of Merck Serono SA:** Inter-Lab is the R&D center of Merck Serono in Israel and operates as an integral part of Merck Serono's global biotechnology research and development organization.
- **Johnson & Johnson:** Premier consumer health company Largest and diverse medical devices & diagnostics company 4th largest biologics company 7th largest pharmaceuticals company 250 companies, 57 countries, 115,500 employees.
- **Kamada Ltd.:** Kamada, a biopharmaceutical company developing, producing and marketing over 10 specialty, life-saving therapeutics over the world, using its sophisticated chromatographic technology.
- **Lostam Biopharmaceuticals:** Development of monoclonal antibodies for the prevention and treatment of multi drug resistant *Pseudomonas aeruginosa* (PA) infections.
- **LSA - Life Science Accelerator:** LSA represents leading, cost-effective, international service providers in each required service category (developmental, clinical and business services), and take an active role in business mentoring of biomed companies at all stages.
- **LunGuard medical:** LunGuard's product is a Peristaltic Feeding Tube (PFT) that is capable of preventing reflux, pulmonary aspiration and is expected to significantly lower the occurrence of VAP in ventilated patients.
- **MD Biosciences Ltd.:** MD Biosciences is drug development partner and pre-clinical contract research organization (CRO) focused in inflammation and neurological diseases as well as pain associated with disease and/or surgical procedures.
- **Medwell Laboratories:** A new class of safe and effective COX-2 inhibitors as anti-inflammatory therapeutics for treatment of arthritis, colitis, psoriasis, and asthma.
- **Metallotherapy:** Nano gold particles encapsulated in Nano-liposome for enhancing brachy therapy cancer treatments.
- **Motus G.I. Medical Technologies:** "One Stop Shop" self-propelled colonoscopic device that cleanses and visualizes the colon, with working channel for biopsies and polyp removal.
- **MST - Medical Surgical Technologies:** Laparoscope mini-robotic positioning system for the large and growing minimally invasive surgery market.
- **NanoVibronix:** NanoVibronix' innovative miniaturized therapeutic ultrasound platform is aimed at prevention of catheter related infection and treatment of pain and soft tissue injury.
- **Nephera:** Nephera has developed a medical device that provides electrical stimulation to the urinary bladder. The treatment improves the cardio-renal interactions in heart failure patients by effectively increasing renal function.
- **Nervomatrix Ltd.:** Nervomatrix developed a novel medical device for the treatment of Low Back Pain. Peripheral nerve endings associated with myofacial trigger points are automatically located, and induced with high-intense electrical stimulation.
- **Nutrinia:** Bioactive insulin-based supplements for both infant formulas and animal feed.
- **OraBio:** Repositions existing drugs for second-use applications. First candidates: ORA101 and ORA102, for non-small cell lung cancer (NSCLC) - already in Phase II; and age-related macular degeneration (AMD) respectively.
- **Pre-Clinical Group Ltd.:** Pre-Clinical Group is a CRO focusing on the Pre-Clinical phase of Drug Development. Accompanying projects from initial In-Vivo Feasibility studies, through Drug Metabolism, Pharmacokinetics, Toxicology and Safety pharmacology developmental stages.
- **Protein Production Services Ltd. (PPS):** PPS is a one-stop-shop CRO/CMO for process development and production of proteins, all the way from cloning to cGMP manufacturing, in bacteria and mammalian cells.
- **RAD BioMed Accelerator Ltd.:** RAD BioMed is Israel's leading Life Science Accelerator, helping to create the next generation of groundbreaking companies from the wealth of Israel's disruptive life-science technologies.
- **RAD Dental Devices:** An innovative solution and distractor for alveolar ridge deficiencies and oral soft tissue regeneration.

- **Ramot at Tel Aviv University:** Agrotech - Biotechnology - Chemistry and Nanotechnology - Communication and computer Sciences - Diagnostics - Electrical Engineering and Electro-Optical - Environmental and Cleantech Technologies - Mechanical Engineering - Medical Devices - Pharmaceuticals - Physical and Material Sciences.
- **RealView Medical Ltd.:** RealView medical is developing a minimally invasive endoscopic device for long-term follow up of transitional cell carcinoma (TCC) patients. RealView technology facilitates a rigorous and effective bladder monitoring through on-demand imaging.
- **Reliance Clinical Research Services:** Reliance Clinical Research Services is a full-service Indian CRO, having completed 200 Phase I-IV and BA-BE studies for EU/FDA submission, including India's largest international study (110 sites recruiting 4500 patients).
- **Remedor Biomed:** An innovative drug combination for boosting the body's natural mechanisms for wound healing and bone repair.
- **RenoPharm:** Novel compounds that release nitric oxide (NO) to be used as pharmaceuticals for hypertension and CNS related disorders.
- **Roche:** Roche is a leader in research-focused healthcare with combined strengths in pharmaceuticals and diagnostics.
- **RTC, Research Toxicology Center:** RTC is a CRO specialised in non-clinical safety studies for product registration according to current international regulatory requirements, with more than 35 years of worldwide experience.
- **Singer Instruments & Control:** Singer Instruments specializes in the medical device industry's leading R&D and manufacturing outsource partner, 30 years experience, dozens of successful projects, ranging from initial prototypes to ISO13485 clean room manufacturing.
- **Technion – T3 (Technion Technology Transfer):** T3 is the technology transfer arm of the Technion. T3 initiates and promotes the transfer of research findings and innovative technologies developed by Technion scientists to the global marketplace.
- **Teva Pharmaceuticals Industries Ltd.:** Teva is a global pharmaceutical company specializing in the development, production and marketing of generic and proprietary branded pharmaceuticals and active pharmaceutical ingredients.
- **VacciGuard:** VacciGuard is developing effective vaccines against virulent pathogens for which there is no effective vaccine solution today and against cancer. A proof of concept with 5 pathogens was obtained.
- **Vital View Ltd.:** Vital View is a highly innovative company developing an ultra thin endoscope designed for cervical and uterine visualization for improved methods of embryo deposit during embryo transfer in

IVF procedure.

- **Yeda Research & Development Co. Ltd.:** Yeda is the commercial arm of the Weizmann Institute of Science. Yeda initiates and promotes the transfer to the global marketplace of research innovative technologies developed by WIS scientists.
- **Yissum Research & Development. Co.:** Yissum Research Development Company of the Hebrew University of Jerusalem Ltd. was founded in 1964 to protect and commercialize the Hebrew University's intellectual property.



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Shaare Zedek: In Pursuit of Tomorrow's Treatments Today

Shaare Zedek Medical Center, affiliated to the Faculty of Medicine at Hebrew University, is an internationally recognized research institution credited with pioneering scientific and medical advancements in a variety of areas. Research is a top priority at Shaare Zedek, alongside excellence in clinical care. Shaare Zedek Medical Center is currently involved with several historic development projects, designed to introduce a new vision for medical care in the Jerusalem area. Alongside its commitment to excellence in medical service provision, Shaare Zedek is equally devoted to the highest standards of basic and clinical research. The Centre is currently involved in numerous cutting-edge research projects, involving national and international collaborations.

Over the years, the hospital has been involved in many groundbreaking medical studies. Upon signing an affiliation agreement with the Hebrew University of Jerusalem's Faculty of Medicine, Shaare Zedek has gained additional impetus and resources, further solidifying its stance within Israel's medical research community. By joining forces with HUJI, an internationally renowned academic institution, Shaare Zedek is in a position to leverage the opportunity to become involved in joint studies in a wide variety of fields.

Noteworthy research achievements are compiled once every few years and presented in the form of a Research Report. Following is the Research Report 2009.

DEVELOPMENT PROJECTS

Building a New Future - Today

Shaare Zedek Medical Center is currently involved with three ambitious development projects that find the hospital in a position of active construction unprecedented since it moved to the current facility in



Aerial Photo of Shaare Zedek Medical Center

1979. Designed to make the hospital even better prepared to respond to the medical needs of the people of Jerusalem and Israel, these projects will usher Shaare Zedek into a new and more advanced era of medicine directly benefiting the patients and the community.

New Wohl Surgical Operating Complex



With the growth in Jerusalem's population and thanks to Shaare Zedek's reputation for excellence, the number of operations performed each year has more than tripled over two-and-a-half decades. Furthermore, the nature of surgical medicine has affected many technological advancements that have completely changed the role this field plays in today's hospitals. Responding to these new realities requires a major investment in creating a new and comprehensive working environment that will cater both to Shaare Zedek's needs today, as well as those that can be anticipated for the future.

The new Wohl Surgical Operating Complex will include 12 ultramodern operating rooms, reflecting the highest standards of medicine and technology. Each will serve a specific surgical department - yet all can be easily adapted to treat patients from other departments when patient flow so demands. The rooms will constitute a significant expansion both in number (the current facility includes eight rooms) as well as in individual size, offering large and roomy working areas, directly benefitting the surgical teams and the patients' health.

Appreciating that the future of surgery holds immense potential for dramatic advancements that will change the way doctors and patients relate to the field, the new Complex is being designed in expectation of new

technologies. Cutting-edge developments, such as robotic surgeries, will place Shaare Zedek at the forefront of surgical practice.

The Complex will encompass more than 33,000 square feet (3,065 square meters) spread over two floors of the hospital. In addition to the operating rooms, the facility will include pre-op and recovery areas, family waiting rooms, administrative and doctor's offices, and sterile supply units.

The Wilf Children's Hospital

Since its earliest days, Shaare Zedek has maintained a stellar reputation in serving the medical needs of children in the Jerusalem area. Today, with the construction of Shaare Zedek's Wilf Children's Hospital, the commitment to this cherished community is taking one major step forward.



As a comprehensive facility, catering to the widest variety of conditions, diseases and injuries, the Wilf Children's Hospital presents a new, brighter vision for pediatric medicine in Jerusalem.

Spread out over two floors totaling more than 60,000 square feet, the Hospital will include all the pediatric in-patient and out-patient departments that currently treat the tens of thousands of children who come to Shaare Zedek each year.

Included in the development will be the new Glaubach Department of Pediatric Emergency Medicine to replace the current one. The new ER will be designed in line with the high standards that characterize the Weinstock Department of Emergency Medicine so that we can ensure our continued reputation for quality and compassionate critical care, to be offered to adults and children alike in settings that are both modern and attractive.



Intended to respond to the widest variety of pediatric emergency situations that occur in the Jerusalem area, the new ER will include triage and trauma units as well as more than twenty individual stations for treatment and observation. Spacious and aesthetically-calming waiting areas will help children and parents alike to relax from the obvious anxieties associated with hospitalization. As a dramatic upgrade from the hospital's current pediatric emergency facilities, both in terms of size and scope, the new Pediatric Emergency Room of the Wilf Children's Hospital will ensure that when the need arises, Shaare Zedek is sure to be there for the children of Jerusalem.

The Wilf Woman & Infant Center

Upon completion in 1999, the Wilf Woman and

Infant Center on the Ninth Floor of Shaare Zedek was originally designed to welcome the birth of 750 babies into the world each month. In the years following its opening, as the Center began to gain an increasingly positive reputation for compassionate and personalized care for mother and infant alike, that threshold was quickly surpassed.

Today, each month the number of babies born is much closer to 1,000. In August 2005 even that line was crossed when 1,060 new lives were welcomed at Shaare Zedek. While the hospital has always ensured that every mother and infant receives personalized care in this special time in their lives, we know that in order to continue to reaffirm that commitment and with an eye towards the continued growth of the Department, the hospital must develop a new Maternity Unit along with two new delivery suites.

These development projects are being designed with the same standards of excellence and attention to a woman and baby's needs that have made Shaare Zedek the leading choice for birthing for Jerusalem area women, involved with more births than all the other area hospitals combined. At Shaare Zedek, bringing new life into the world is one of the hospital's most cherished responsibilities and through these new developments the centre will proudly play its role in helping Jerusalem's growth for many years into the future. ■

Genetic Factors Linked to Breast Cancer Discovered

British scientists have found five common genetic factors linked to the risk of developing breast cancer, giving researchers a better understanding of its causes and clues for developing more treatments, according to Reuters.

Douglas Easton from Britain's University of Cambridge led the largest genome-wide analysis of breast cancer patients to date, scanning the gene maps of 16,536 patients, and found five new common gene variations, says the news agency report.

The findings add to 13 other common genetic variants for breast cancer and will help explain

around 8 percent of the risk of getting the disease, Easton and colleagues wrote in a study published in the journal *Nature Genetics* on Sunday.

A few, high-risk gene variants that occur much more rarely account for another 20 percent of breast cancer risk.

Breast cancer is the most common type of cancer in women in rich nations. It kills around half a million people worldwide each year.

Family history is a well-established risk factor. Having a close relative with breast cancer approximately doubles a woman's risk for the disease. ■

Israel in 2009

Israel World's 9th Most Innovative Country: The Economist

Israel has been rated the ninth most innovative country globally in 2008, and is forecast to rise further to win the eighth position sometime between 2009 and 2013, according to an updated ranking of an Economist Intelligence Unit (EIU) report called "the World's Most Innovative Countries."

The innovation index ranks 82 countries based on their innovation capacity and forecasts their performance through 2013. The new rankings largely confirm the forecasts of the original research done in 2007. The forecast for 2009-13 takes into consideration the severe business downturn and the global economic crisis, which will have a negative impact on countries' long-term ability to innovate.

According to the Economist, the current financial turmoil is expected to affect innovation worldwide through a reduction in significant drivers of innovation such as investment in research and

development (R&D), spending on training and education and the quality of information and communications technology (ICT) infrastructure. The crisis will also have a negative impact on other aspects of the environment that enable innovation globally, including access to finance for firms, conditions for entrepreneurship, and economic and political stability. Recent data shows, however, that Israeli innovation continues to be boosted by a steady flow of foreign direct investment, which reached a near-record high of over \$10 billion in 2008. The Israeli market also continues to be a highly favored destination for some of the world's most successful companies. According to the Israeli media, in June alone visits are expected by, among others, Hewlett Packard CEO, Mark Hurd, Oracle President and CFO, Safra Catz, Dell CEO and Founder, Michael Dell, and chief software architect at Microsoft, Ray Ozzie. ■

Johnson & Johnson Buys Israeli Biopharma Firm Omrix for \$438 mln

Healthcare company Johnson & Johnson is buying Israel's Omrix Biopharmaceuticals for \$438 million in cash. The two companies have collaborated for the past five years. Omrix, established in 1995, has developed and markets the unique surgical sealant, Quixil.

Describing the acquisition, Alex Gorsky, Company Group Chairman for Johnson & Johnson said, "Our partnership with Omrix has already expanded our capacity to provide innovative, next generation products that raise the standard of surgical care."

Under the terms of the agreement, Omrix, a biopharmaceutical company that develops and markets bio-surgical and immunotherapy products, would operate as a stand-alone entity and would be reporting through ETHICON, a Johnson & Johnson company and leading provider of suture, mesh, hemostats, and other products for surgical procedures. In 2006, Johnson & Johnson, a multinational pharmaceutical and health products company with 2007 revenues of \$61 billion, purchased Israel's Colbar LifeScience, a biomaterial product company. ■

Swiss Pharma Giant Roche in R&D Pact with Israeli Firm Pontifax

Swiss pharmaceutical giant F. HoffmannLa Roche has signed a deal with Israeli venture capital firm Pontifax Management Company for its first significant undertaking in the country to build its R&D pipeline by way of investment in the Israeli life science industry.

Pontifax will help Roche, one of the world's leading healthcare companies, identify and invest in Israeli biotech companies with an initial focus on seed-stage and later-stage biotech firms, in areas such as drug development, clinical trials, manufacturing, and marketing. Selected start-ups will be admitted to an incubator affiliated with Pontifax. The joint investment will complement funding through the incubator program of Israel's Office of the Chief Scientist at the Ministry of Industry, Trade and Labor.

In 2007, a delegation of Hoffman-La Roche executives visited 40 Israeli biotech companies and examined 47 academic research projects.

Roche, established in 1896, covers every stage of the healthcare process, from identifying disease susceptibilities and testing for disease in at-risk populations, to prevention, diagnosis, therapy and treatment monitoring.

Herzliya-based Pontifax specializes in investments in incubation, early and mid stage seed companies and other startups.

Despite the pressures of the global financial crisis, Roche joins several other international companies that have chosen to invest in the Israeli life science industry.

In February 2009, Medtronic Inc, the world's largest stand-alone maker of medical devices, agreed to buy the Netanya-based Israeli start-up Ventor Technologies, for \$325 million in cash. Prior to that, Johnson & Johnson bought Omrix for \$438 million and St. Jude acquired Haifa's Mediguide for \$300 million. ■

IBM, Technion, Rambam Jointly Win First Prize in Global Medical Service

IBM, the Technion and the Rambam Medical Center in Haifa have won first place from among dozens of competing multidisciplinary teams from different locations worldwide for improving medical service to patients. The research done will enable follow-up and close accompaniment of patients from their admission to the emergency room through their entire period of hospitalization, allowing for the most efficient allocation of resources.

"The Rambam Medical Center, the Technion and the IBM research lab in Haifa have succeeded in carrying out collaboration between industry, academia and government, and bringing ideas and innovative methods to realization," said Denise Villamil, vice president of the San Diego based Service Research & Innovation Initiative (SRII).

The SRII prize is intended to emphasize the activities of individuals, institutions, organizations and academia around the world in research and innovation in the field of service processes and at the same time to publicize and preserve the scientific knowledge acquired during such research. The Service Research & Innovation Initiative is a consortium of technology companies, government agencies and universities dedicated to fostering advancements in service research. Advisory board members include, among others, Hewlett Packard, Microsoft, Sun Microsystems, and Xerox, while academic participants include, among others, top researchers from UCLA, Wharton School of Business, and University of California Silicon Valley Center at Santa Cruz. ■

Medtronic Acquires Israeli Start-Up Firm Ventor to Carry out R&D Work

Medtronic Inc, the world's largest stand-alone maker of medical devices, is buying the Netanya-based Israeli start-up Ventor Technologies, for \$325 million in cash. Following the acquisition, the Israeli company will be known as Medtronic Ventor Israel and will continue research and development.

"We appointed scouts whose job is to track Israeli technology and bring it to us. We are very satisfied with the investments we made so far in Israel, like the acquisitions of Instent and Odin," said Bill Hokins, Medtronic's CEO.

Ventor, established in 2004, developed a unique aortic valve prosthesis that can be implanted in severely ill cardiac patients with heart valve-related diseases to enhance blood supply to the body. The aortic valve prosthesis can be implanted on a beating heart without requiring open heart surgery. The advantage of Ventor's product over that of its

competitors is the catheterization mechanism that allows for more stable positioning of the prosthesis. The acquisition follows an earlier \$7.5 million investment in the company by Medtronic, which said it was "scouting for good technology."

Despite the global credit crisis, multinational concerns continue to invest in Israeli expertise. Global demand for breakthrough technologies in life sciences is expected to be less affected by the slowdown, due to the long R&D processes required in this field, and the culmination of patent licenses for some popular medicines in the future. Hence, analysts expect the Israeli sector to be largely safeguarded from financial pressures. Including Ventor, three Israeli companies in the fields of life sciences have so far been acquired since December 2008. Johnson & Johnson bought Omrix for \$438 million and St. Jude acquired Haifa's Mediguide for \$300 million. ■

St. Jude Medical Acquires Israel's Tech Firm MediGuide for \$283 mln

St. Jude Medical, which was named Fortune Magazine's "Most Admired Medical and Precision Equipment Company" for the second year in a row in 2009, is acquiring the Israeli medical-technology company MediGuide, which develops technology to guide catheters in minimally invasive medical procedures, for \$283 million in cash.

"We believe MediGuide's proprietary technology may also extend across a variety of other product categories ... We look forward to bringing this technology into our portfolio so that we can further develop and capture these potential opportunities," Daniel J. Starks, chairman, president and chief executive officer of St. Jude Medical, said.

MediGuide's navigation system tracks a tiny sensor mounted on a needle, guide wire, catheter or other medical device placed in the body by a physician during a catheterization or other minimally invasive

procedure.

MediGuide was founded in 2001 as an internal division of Elbit Systems, which is one of Israel's largest defense electronics manufacturers. MediGuide developed medical uses for guidance technology that the parent company had developed. Many of the technologies developed by Israel's defense industry are successfully adapted to sectors across the board.

MediGuide has agreements with Medtronic, Siemens, Asahi Intecc of Japan, Boston Scientific, and Philips and will become part of St. Jude's atrial fibrillation division.

Minnesota-based St. Jude focuses mainly on technology to manage heartbeat rhythm, devices for cardiac surgery and implantable neuro-stimulation devices for the management of chronic pain. ■

Sunrise Sector: Biotechnology

The Indian biotechnology sector is expected to play a key role in shaping India's rapidly developing economy. Here is a comprehensive overview of the market size of the sector, its key drivers and opportunity segments.



Currently, India holds two per cent share of the global market of one of the fastest growing knowledge based sector - biotechnology. With numerous comparative advantages in terms of research and development (R&D) facilities, knowledge, skills, and cost effectiveness, the biotechnology industry in India has immense potential to emerge as a global key player.

According to an industry survey, carried out by the Association of Biotech Led Enterprises (ABLE), the biotechnology industry in India has notched up a growth of 18 per cent during 2008-09, earning revenues of US\$ 2.67 billion for the country.

Exports accounted for nearly 60 per cent of the total

business in 2008-09 and went up by almost 25 per cent to reach US\$ 1.57 billion. The domestic business at US\$ 1.09 billion registered a 10 per cent growth in the same period.

The biopharma segment continued to account for the largest share of the biotech industry's revenues. In 2008-09, the biopharma sector accounted for a 65 per cent share of the total pie with revenues of US\$ 1.73 billion. The bioservices sector registered a 31 per cent growth in the period, while the bioagri sector grew by 24 per cent to reach US\$ 329.33 million.

The other two sub-sectors, namely, the bioindustrial sector, grew by 16 per cent to reach US\$ 105.34 million and the bioinformatics sector, grew by 15 per

cent to touch US\$ 48.48 million in 2008-09.

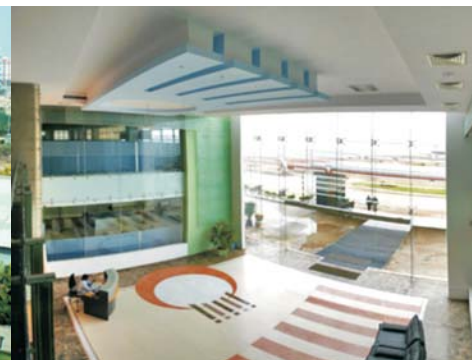
India is ranked among the top 12 biotech destinations in the world and is the third biggest in the Asia-Pacific region in terms of the number of biotech companies, according to a report by the Confederation of Indian Industry (CII) and consultancy firm KPMG.

India is also gaining importance as a clinical trial destination. The global clinical research outsourcing market is projected to touch US\$ 23 billion by 2011, with consultancy firm, KPMG, estimating that India will corner 15 per cent of this in two years.

According to a joint study by FICCI and Ernst and Young (E&Y), the industry-sponsored Phase II, Phase III clinical trial study sites in India have grown by 116 per cent over the last 15 months, with the country moving from rank 18 to 12 across the 60 most active countries.

India participates in 7 per cent of the global Phase III trials and 3.2 per cent in the Phase II trials with industry-sponsored trials.

The Stem Cell Global Foundation, a New Delhi-based organisation promoting stem cell research, estimates the business to be growing at a compound annual growth of 15 per cent and to cross US\$ 450 million in 2010-11.



India has also joined an elite group of six countries which have successfully decoded the human genome indigenously. The discovery will bring pharmaceutical companies a step closer to designing drugs accounting for the specific characteristics of the Indian physiology.

The US, UK, China, Canada and South Korea are the five other countries to map the genetic code.

Major investments

Investments, along with outsourcing activities and exports, are key drivers for growth in the biotech sector. Some of the major investments in the sector are as follows:

Two US-based biotech companies, Imac and Indus Expression, floated by non-resident Indians, have planned an investment of US\$ 104 million to set up their units in India at the SEZ proposed by the Andhra Pradesh Industrial Infrastructure Corporation (APIIC).



Panacea Biotech Ltd has bagged a three-year contract worth over US\$ 119.2 million from UNICEF to provide the agency with EasyFive vaccine, a protection against a set of pediatric diseases.

France's largest drugmaker, Sanofi-Aventis, has bought Shantha Biotechnics for US\$ 773.8 million.

Vibha Seeds Group has invested US\$ 42.99 million to set up a multi-crop seed processing facility in Andhra Pradesh. The company is engaged in private crop genetics and plant breeding researches.

Alexandria Real Estate, the US\$ 5.2 billion US-based company which provides



solutions to the life sciences industry, has decided to set up a biotech R&D and incubation facility in Gujarat. It plans to spend around US\$ 107.48 million for the project.

Tie- ups

Many other world bio-technology industries have expressed desire to tie up with Indian biotech companies. Avesthagen, a Bangalore-based life sciences firm, has announced the formation of a joint venture (JV) with Limagrain, a French international cooperative group. Limagrain will hold the majority 51 per cent in the JV, Atash Seeds Pvt Ltd, to build a agri-biotech business model for field crops.

Bayer CropScience AG, a subsidiary of Germany-based global crop sciences major Bayer AG and GVK Biosciences Private Limited (GVK Bio) of Hyderabad, have entered into a research cooperation agreement in the area of early discovery chemistry.

Also, GVK Biosciences, has partnered with the US-based clinical organisation, ResearchPoint Global. Together, the two companies which are full service contract research organisations (CROs), will offer access to medical writing, clinical data management and biostatistics, as well as quicker patient recruitment.

Biocon Limited, the country's second largest biotechnology firm, has signed a Memorandum of Understanding (MoU) with Malaysia's Biotechnology Corporation (BiotechCorp) to explore collaboration

and potential investment in Malaysia's biotechnology industry.

Government initiatives

In recognition of the need of training and education for generating interdisciplinary human resource relevant to biotechnology, the Government of India and UNESCO, have taken a joint decision to establish the Regional Centre for research, training and education in biotechnology under the auspices of UNESCO. The UNESCO Regional Centre for Biotechnology is scheduled to come up in Faridabad, Haryana by the end of 2010.

Further, the Department of Biotechnology (DBT), Government of India, has also decided to set up a unique Health Biotech Science Cluster (HBSC) at Faridabad. The DBT is exploring avenues to fund research, focussing on the opportunity for bio-similar products and creating infrastructure to scale-up human resources to support a shift to high-end research in the long term.

The Centre is also looking to support innovation from universities, and a bill to empower scientists and help them commercialise their innovations is expected to be passed by the end of the year.

Moreover, the government will fast forward the process of setting up a National Biotechnology Regulatory Authority, to stimulate public and private investment in biotechnology.

Looking ahead

India is already being globally recognised as a manufacturer of economical, high quality bulk drugs and formulations. With a huge base of talented, skilled and cost-competitive manpower, and a well-developed scientific infrastructure, India has great potential to become a leading global player in biotechnology.

According to Kiran Mazumdar Shaw, CEO of biotechnology company, Biocon, and Chairman of the Karnataka Vision Group on Biotechnology, the next goalpost that the domestic biotechnology sector has set for itself, is to reach a turnover of US\$ 10 billion by 2015. ■

Elbit Healthcare in India

Elbit Imaging, a dynamic and fast-growing conglomerate with interests in real estate and various entrepreneurial investments, has set its healthcare foot in India through its hospital venture 'Elbit India healthcare,' to cater to the vast unmet needs of specialized medical care in the country.

India with its economic potential is a key strategic focus area for the group. Along with healthcare, the Elbit India businesses include real estate and agro technology. The company has gotten into strategic partnerships in all its ventures, including in building high-end commercial complexes and residential apartments in Pune, Bangalore, Kochi; setting up its world-class hospital projects and also for all its upcoming mega projects.

Elbit India Healthcare

Healthcare is one of India's largest sectors both in terms of revenue and employment and the sector is expanding rapidly.

Elbit India healthcare aims to develop and operate a chain of about 20 tertiary care hospitals with special focus on Tier I and Tier II cities. These facilities would be advanced tertiary care centers covering all major specialities and diagnostics and on par with the best institutions in the world.

Elbit India Healthcare vision is to become a leading chain of tertiary care hospitals providing quality healthcare through state of the art technology and medical resources. It plans to achieve this vision by:

- Establishing a chain of recognizable Tertiary Care facilities across India in phases. In Phase 1, Goa, Bangalore, Mumbai, Pune, Kolkata and New Delhi have been identified as locations. This is to be further supplemented by another 15 cities in Phase 2.
- Phase 1 will include 1700 beds which will be supplemented by an additional 6,000-8,000 beds in Phase 2.

An integrated linkage with other players in the value chain such as Health Insurance Players, Pharmacies and Medical Colleges.

The hospitals are envisaged to become nationally and internationally accredited by the leading accreditation bodies, namely, JCI and NABH.

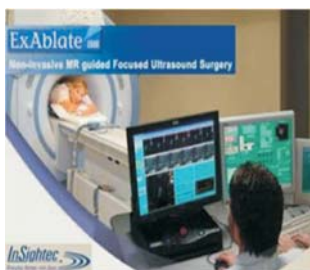
The focus of the healthcare chain is to pursue the following objectives:

- Patient safety
- Quality and cutting-edge technology
- Clinical excellence
- Patient centeredness
- Affordability of services
- Service & hospitality excellence
- Top operational efficiency
- Environmental and energy conscience

All of the above objectives are envisaged to be achieved by innovative design of the facilities, a holistic patient-centric approach throughout the hospital stay and a transparent and truthful relationship with all stake-holders.

Elbit, building on its excellent relationship with leading hospitals worldwide, has built a panel of 'reference departments' led by leading physicians overseas, that shall serve as a professional backbone for the chain and will allow for technology transfer and continuous training of all teams in India. These "star" consultants shall come occasionally to India and perform highly sophisticated procedures as well as become available for "second opinion" on a telemedicine basis.

A key feature of Elbit India Healthcare is the latest technology advancement of treating cancerous tumors. Insightec, a subsidiary of Elbit imaging, has developed a product that integrates focused ultrasound energy and Magnetic Resonance Imaging (MRI) to provide a non-invasive treatment modality that can replace invasive procedures and provide therapeutic alternatives to millions of patients with serious diseases around the globe.



Elh Goa Super Speciality Hospital

The first of the Elh super speciality hospitals is the proposed 150-bed Elh Goa Super Speciality Hospital. It is a Public Private Partnership (PPP) between Elh and the Government of Goa (GoG). The great scenic beauty, and the architectural splendors of its temples and churches, have made Goa a firm favorite with travelers around the world.

The mission of the Elh Goa Hospital is "to make a difference in the lives of our patients, mitigate their pain and suffering and ensure they live happier and meaningful lives. We will achieve it through true professionalism, cutting-edge technology, international expertise, holistic multidisciplinary approach and proactive partnership with our patients and their families."

The hospital is designed to bring world-class healthcare, state-of-the-art technology & international medical practices. The hospital project is located opposite Goa Medical College, next to Dental College Hostel. The plot is located on NH 17, a 30-minute drive from Dabolim International Airport.



Elh Goa Hospital has been designed for great aesthetics. It has pleasing exteriors complemented by fine interiors. The patient rooms have a view of landscaped gardens. There is also a view of the sea.

The hospital will focus on all major specialities

including—

- Cardiology & cardiac surgeries like CABG, Angioplasty
- Neurology & neurosurgery
- Oncology with treatment of cancerous tumors
- Orthopedic like hip replacement and knee replacement
- Trauma care, and more.

In all of these specialities, the patients will get the best of both worlds – the most advanced medical care coupled with specialist service.

The hospital will have facilities to match any hospital internationally and will be an additional attraction for people to travel to Goa. The hospital will have accreditation like JCI, NABH, etc. which will help foreign agencies rate the hospital on international standards.

In addition to the 'Care' factor, Elbit India Healthcare is keenly focused on the 'Quicker Healing' factor. It is not just about respecting the patient's time but also knowing that everyone likes to heal faster.



The Elh Goa Hospital foundation stone was laid on 25th January, 2010 at Bambolim, Goa, by the honorable Chief Minister of Goa, Shri. Digambar Kamat. ■



Maharashtra: Key Investment Destination in India

Indicus Analytics, www.indicus.net

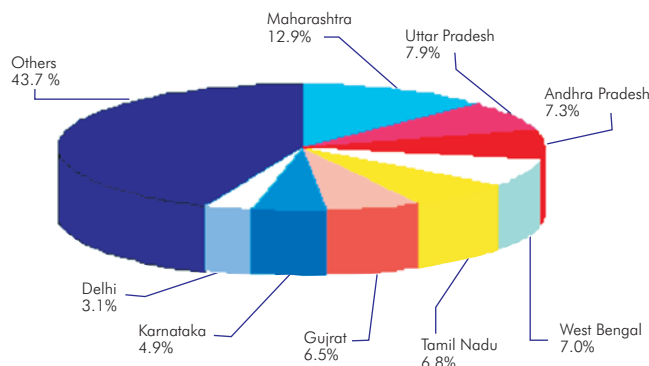
Maharashtra has over the last 50 years been the key state driving the Indian economy. Not only does it continue to be the largest in terms of the size of the economy, but also it is among the fastest growing economically significant states of the country. Mumbai is Maharashtra's and India's main economic engine. Mumbai is the largest metropolis as well as the financial, commercial, industrial and celluloid capital of India. It is the cosmopolitan city with a potpourri of cultures and glamour. Foreign investors tend to look at India through the prism of Mumbai.

Favourable economic policies in the 1970s led to Maharashtra becoming India's leading industrial state in the last quarter of the 20th century. Over 41% of the S&P CNX 500 conglomerates have corporate offices in Maharashtra while Mumbai remains the financial centre of India. Mumbai, Pune and Western Maharashtra are the most developed. These basic facts are recognized and are reflected in the actions of investors. Maharashtra has always been the highest recipient of FDI and continues to be so. In this article we look at some of the macro-economic and demographic factors which make Maharashtra the attractive destination it is. The figures also suggest that Maharashtra's pre-eminence is not about to be challenged in a hurry. It has built a huge lead over the rest of the country and it's an elephant which can dance, as is reflected by the high growth rates the state regularly clocks.

The Maharashtra Economy

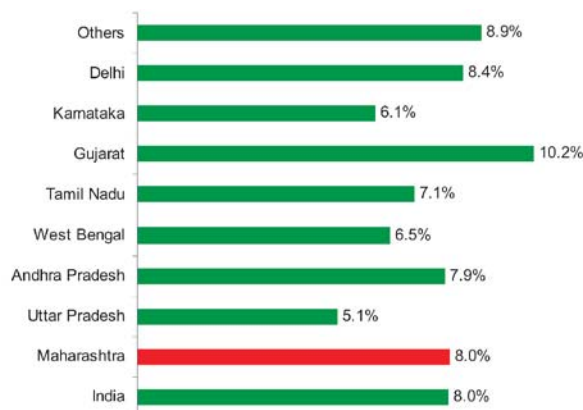
Maharashtra is the key state in the Indian

economy, and has the largest share of the Indian economy. Of the 35 states and union territories, Maharashtra is by far the largest economy and has as much as 13% share of the Indian economy, which is estimated to be over a trillion dollars today. It is as much as 63% larger than its nearest rival.



(Source: Indicus Analytics Research).

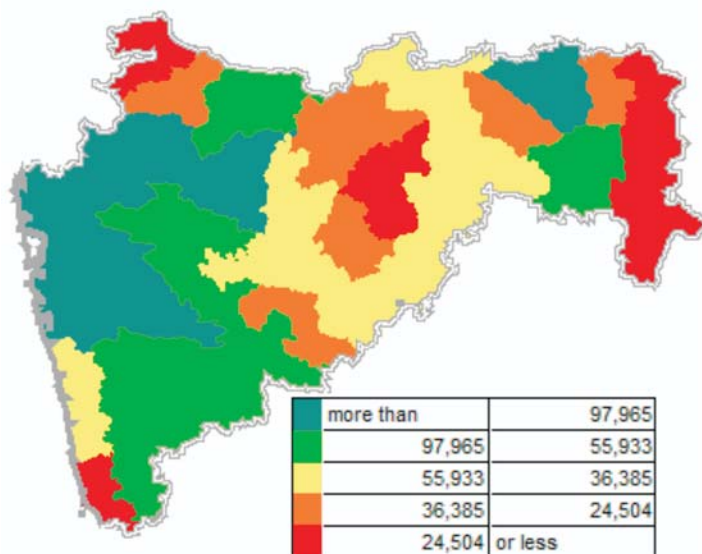
In spite of being a large state, Maharashtra is also a front runner in terms of growth. There are very few comparable states growing faster than it and since its base is so much larger, it will continue to offer relatively more opportunities for economic participants. Growth rates over the period 2001-02 to 2007-08 are depicted below.



(Source: Indicus Analytics Research)

Of the economically vibrant states, only Gujarat has been growing significantly faster than Maharashtra. However, the Gujarat economy is only half the size of the Maharashtra economy. Maharashtra continues to power the growth of the nation in a way that no other state can hope to match in the short run.

Economic Centres of the State



(Source: Indicus Analytics Research. The figures indicate GDP in INR millions)

The diagram above maps the economic centres of the state. The figures indicate GDP constant prices (INR '99-00) for the year 2007-08, in INR millions. The leading districts and their share of the state GDP are as follows:

Mumbai	Thane	Pune	Raigarh	Nagpur	Nashik
39%	10%	9%	3%	3%	3%

Economic Structure:

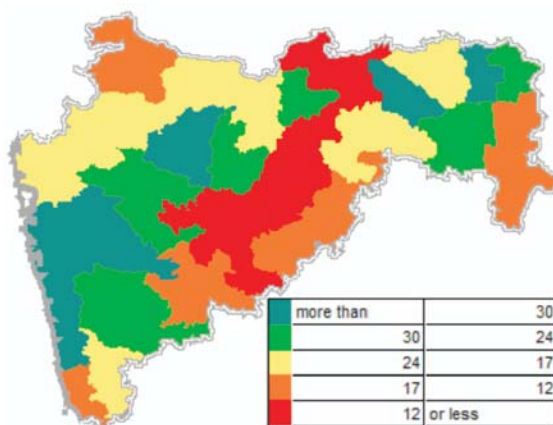
	Growth Rate	Share of Economy
Primary Sector	4.6%	14%
Secondary Sector	9.2%	27%
Tertiary Sector	8.4%	59%

The tertiary sector is the mainstay of the economy and is growing faster than the overall economy. The secondary sector, which includes manufacturing, is the fastest growing sector. The key manufacturing centres (based on share of

secondary sector in the total economy) are:

(Source: Indicus Analytics Research. The figures are in percentages)

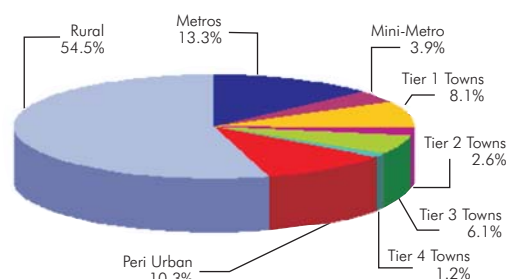
Consumer Markets of Maharashtra



Given the fact that Maharashtra is the leading state economy of the country, it naturally follows that it is the most important consumer market in the country. Maharashtra has one of the highest level of urbanization of all Indian states. The proportion of the urban population (45%) contrasts starkly with the national average.

The other large cities apart from Mumbai are Pune, Nagpur, Nasik, Navi Mumbai, Thane, Amravati, Aurangabad, Kolhapur, Sangli and Solapur and these constitute the key markets of Maharashtra. The state is also an agricultural powerhouse and the rural markets here are considerably wealthier than other parts of the country.

The total state population is estimated to be 109 million. The distribution of the population for various strata is given below:

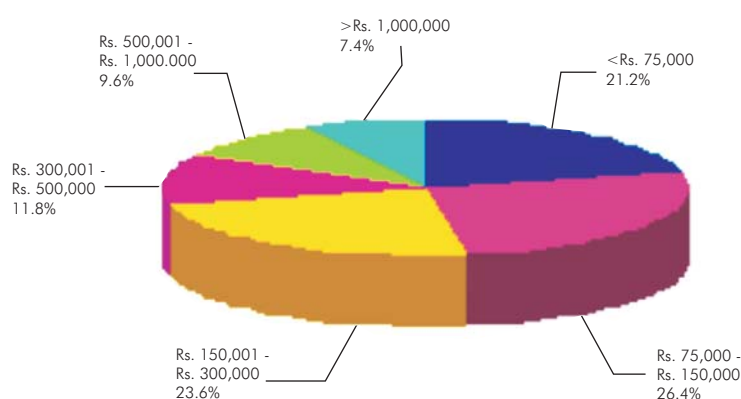


(Source: Indicus Analytics Research)

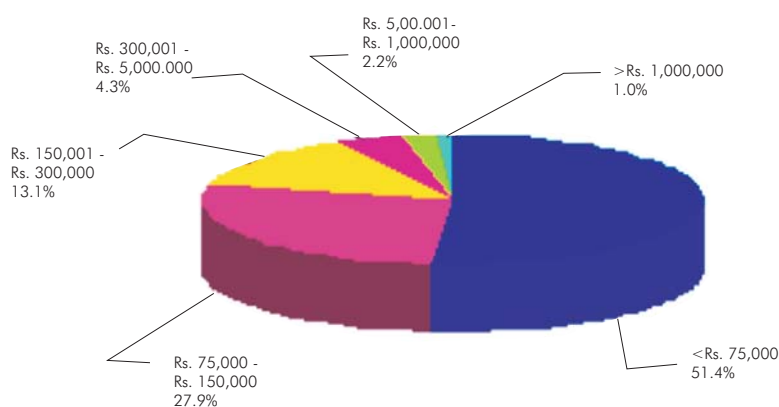
Maharashtra is among the most urbanized Indian states with an urbanization of 45% which is 50% higher than the national average. Of the total population, as many as 25.3% live in metros, mini-metros and tier-1 towns, i.e., cities with population above 1 million. A further 9.9% live in smaller towns of population varying between 100,000 and 1 million and another 10.3% live in very small towns of population less than 100,000.

Income distribution

Urban Households in various Income Classes



Rural Households in various Income Classes



(Source: Indicus Analytics Research)

The total household consumer market (in terms of household expenditure) of the state is worth Rs 1.22 trillion in the rural segment and Rs 2.92 trillion in the urban segment. The annual household savings are Rs 463 billion and Rs 1.2 trillion respectively.

The savings rates are 27.5% and 29.5% respectively.

Expenditure pattern of urban Maharashtra:

	India	Maharashtra
Food	25.6%	22.2%
FMCG	9.6%	9.2%
Durable goods	1.3%	1.3%
Clothing and footwear	4.0%	3.5%
Misc. goods and services	59.4%	63.8%

(Source: Indicus Analytics Research)

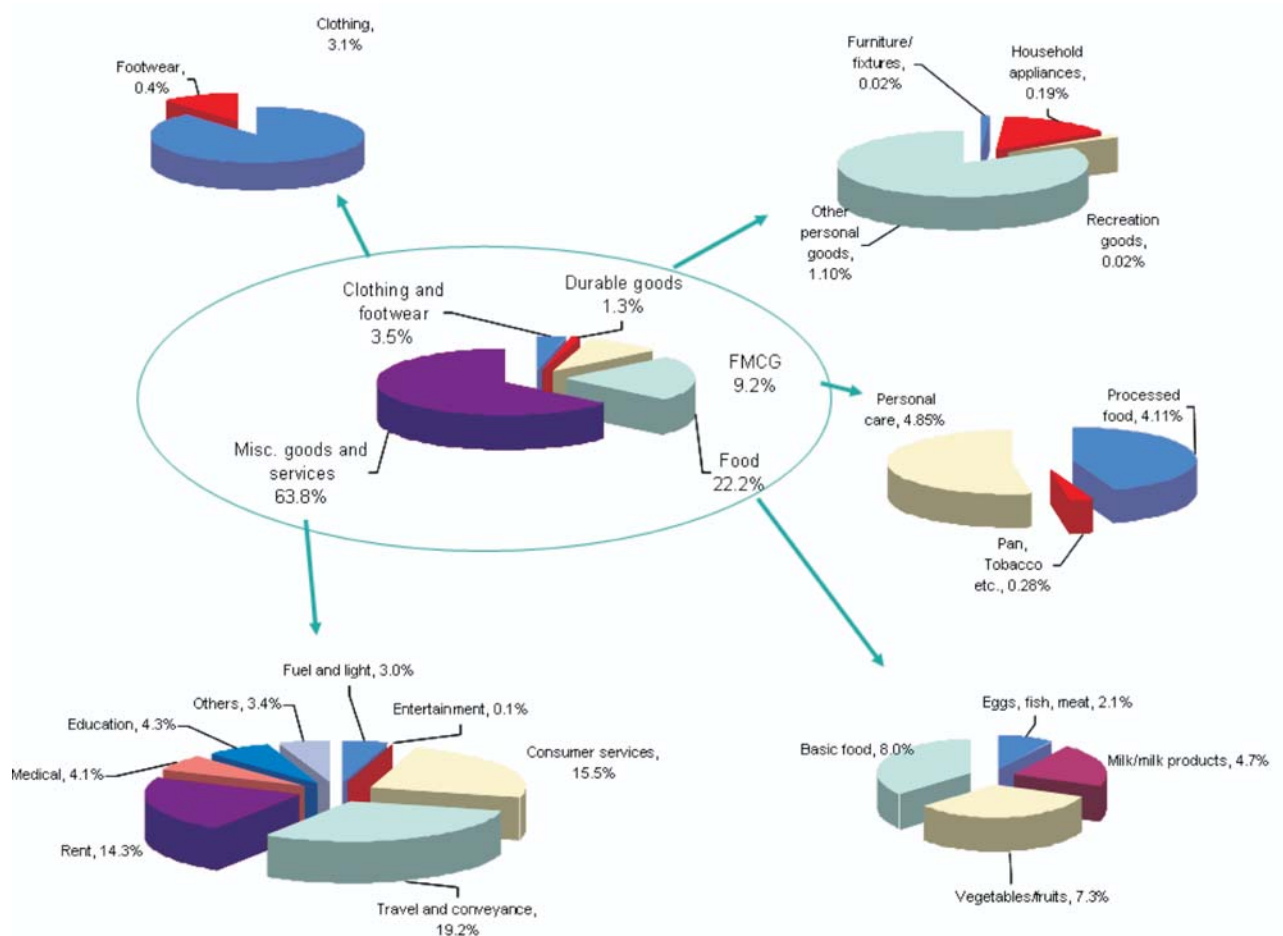
The expenditure pattern is more towards value added goods and services when compared to the national average. This is to be expected given the fact that Maharashtra leads the rest of the country on virtually all economic parameters. The complete expenditure pattern across 21 categories is presented on the next page.

The top items in terms of share of consumer wallet are travel and conveyance, consumer services, rent, basic food, vegetables/fruits, and personal care, which together account for 69% of the expenditure of urban consumers.

The high share of value added goods and services in the consumer wallet reflects a high level of development and the sophistication of the buyers. Indeed, in some of the key districts of Maharashtra, the share of value added goods is even higher and they therefore represent opportunities for marketers.

The Affluent

The affluent sections are the key segments for all marketers and investors. The affluent are those that have a large amount of wealth and spending power. This is reflected in their high income profile. The affluent tend to be very different from those less fortunate economically. Affluent households tend to have lifestyles characterized



(Source: Indicus Analytics Research)

by lesser physical work, greater expenditures on entertainment, lower time spent on day-to-day necessities of household chores and occupation. They also have a different disease profile.

Mumbai and Maharashtra are home to some of the most affluent sections of the society. For instance, Oshiwara in Andheri (West), Mumbai is the richest neighbourhood in India, with over 15,000 households having annual incomes of over Rs 1 million (source: Indicus Analytics Research). In fact, of the top 20 neighbourhoods in India, as many as 18 are from Mumbai.

In Conclusion

High growth has contributed to greater incomes for households, which in turn has enabled them to both save and spend more. It has been observed in the past few years that household sector savings have in fact grown by far more than any of the other macro-

indicators. This is of course a desirable outcome. Greater incomes do imply greater expenditures in the short term, but greater savings (if translated into good quality investments) ensure long term growth of the economy, employment opportunities, and household incomes.

Mumbai remains an attractive investment destinations, given its robust long term growth prospects and continuing economic and market reforms. ■



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