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Revenue per product 2007*

Revenue DKK 10,985 million
Research and development costs DKK 2,187 million
Profit from operations DKK 2,695 million
Net profit for the year DKK 1,770 million

Employees by business area in 2007

Cipralex® (escitalopram) for the treatment of depression and anxiety was developed by Lundbeck and is the most frequently prescribed branded antidepressant in Europe and the USA.

Azilect® (rasagiline) for the treatment of Parkinson’s disease was developed in collaboration with Teva Pharmaceutical Industries Ltd. Lundbeck currently markets Azilect® in 24 countries.

Ebixa® (memantine) for the treatment of moderate to severe Alzheimer’s disease was developed in collaboration with Merz Pharmaceuticals GmbH. Memantine is the second most prescribed pharmaceutical for the treatment of Alzheimer’s disease in the world.

Cipralex/Lexapro® (escitalopram) for the treatment of depression and anxiety was developed by Lundbeck and is the most frequently prescribed branded antidepressant in Europe and the USA.

Serdolect® (sertindole) for the treatment of schizophrenia was developed by Lundbeck and has been launched in 28 countries since 2006.

Employees by business area in 2007

Azilect® (rasagiline) for the treatment of Parkinson’s disease was developed in collaboration with Teva Pharmaceutical Industries Ltd. Lundbeck currently markets Azilect® in 24 countries.

Lundbeck’s clinical development projects as of 4 March 2008

Indication Compound Development stage Registration application Expected launch

Schizophrenia Serdolect® USA 2008 2009
Schizophrenia Bifeprunox Phase II 2010+
Stroke Desmoteplase Phase II 2010+
Alcohol dependence Nalmefene Phase II 2010+
Depression Lu AA21004 Phase I 2010 2010+
Psychosis Lu 51-110 Phase I 2010+
Depression Lu AA24530 Phase I 2010+
Depression Lu AA34893 Phase I 2010+
Psychosis/Bipolar disorder Lu AA39959 Phase I 2010+
Stroke/neuronal damage Lu AA24493 Phase I 2010+
Neurological diseases Lu AA47070 Phase I 2010+
Mood and anxiety disorders Lu AA37068 Phase I 2010+

* Exclusive of non-recurring items.
At Lundbeck, the future’s demand for new drugs is the pivot of our activities. More than twelve years can easily elapse from the inception of a new drug, until we have the finished product. We must therefore have a realistic idea of what will be expected of a drug by that time, as well as what will then be known about the target disease. One thing is certain: we will have more knowledge then than we have today.

Our goal is to produce drugs which, at the close of the next decade, will represent something entirely new and innovative in the treatment of psychiatric disorders and neurological diseases such as depression, schizophrenia and stroke. This is no easy task, but we undertake it with great enthusiasm. We are deploying our imagination, knowledge and expertise to project our drugs into the future. Predicting the future has never been easy, but we do what we can to create the best possible treatment options for patients with psychiatric disorders and neurological diseases.

Simultaneously with our work to prepare the drugs of tomorrow, we are in the process of preparing tomorrow’s workplace. The staff member who applies the finishing touch to a product 10 years from now may still be a student today. Our workplaces all over the world must be able to attract new staff who will wish to remain with Lundbeck – and this applies to staff members of all ages.

We are working to develop and market new CNS drugs, but we also have a duty to help influence attitudes towards these disorders and diseases, so no one is stigmatized for being ill, but all are met with understanding and help.

Therefore, wherever we are in the world, we attach great importance to addressing CNS holistically. We do this to invent and develop new pharmaceuticals, to help turn stigmatization into understanding, and to contribute to psychiatric disorders being perceived and treated on an equal footing with other illnesses.

In this magazine, we present a cross-section of our world, our partners and our staff members. We hope you will find it enjoyable reading, and that it will provide insight into who we are and what Lundbeck represents.
In last year’s Danish thriller *Love on Film* there is a very expressive scene in a mortuary where a doctor is performing an autopsy, and where the main character of the film pensively asks: “Where is the seat of love?” In answer, the doctor takes the brain of the deceased in his hand and identifies an area deep within the grey folds. Obviously, the brain is the seat of love.

This has not always been taken for granted. If the film had been made merely ten years ago, the two men would perhaps symbolically have picked up the heart or spoken of the spirit of the deceased, but today focus is on the brain. It is apparent everywhere. The media have taken to brain research with a gusto, frequently presenting the latest results in sensational headlines. A steady stream of articles and TV programmes keeps us informed of how scientists are in the process of anchoring even the most insubstantial of human characteristics in the approximately 1,300 grams of wet tissue between our ears.

Such research is, of course, primarily concerned with the diseases and disorders that affect the brain. New types of examinations are constantly increasing the understanding of the psychiatric spectrum that spans from depression, anxiety and obsession, across schizophrenia and bipolar disorder, to dementia. At the same time, many phenomena that were formerly considered to be ‘psychological’ or ‘mental’ are now explained in neurological terms, as patterns of brain activity.

Modern scanning methods are particularly important in this development. With the use of MRI and PET scanners, it is possible to look directly into the living brain and establish how actions, thoughts and feelings are created by the electric and chemical communication which takes place among billions of brain cells. Even the most complex phenomena are mapped. Scientists not only scrutinize love, they attempt to understand how everything from empathy and prejudice to artistic taste arise in the brain.

**Knowledge eliminates stigma**

While the new knowledge is fascinating in itself, the most interesting aspect is the question of its wider significance – including the way we view ourselves and each other. I am convinced that this deeper scientific knowledge will be significant in many areas, and that one of the most obvious is our response to mental disorders.
Despite all that has happened during recent years, the prejudice surrounding mental disorders continues to flourish. As a patient, one does not speak as freely and willingly about a depression or psychosis as one speaks about a broken leg. One can often discern a sense of embarrassment that is associated with the feeling that mental problems somehow reflect personal weakness.

Here, brain research can play a decisive role. Because, in revealing that all aspects of our psyche are the direct result of biological phenomena, science is making it evident that, in reality, there is no difference between physical and mental disorders. Fundamentally, both are organic injuries or chemical imbalances that just happen to affect either the body or the nervous system.

There is also another important parallel. Modern research shows that mental disorders arise in exactly the same way as diabetes, cardiovascular and other common diseases, namely as a combination of genetics and environment. One is born with a certain amount of genetic disposition or sensitivity which can be activated by a number of external factors. Again: there is a fundamental commonality between the mental and the physical. Once this recognition is absorbed by our culture and regarded as self-evident, the age-old stigmatization of psychiatric disorders will unavoidably fade and disappear.

**Depression – my eye-opener**

There is also something to be gained at the personal level in the growing knowledge of the brain. Accepting that the psyche is a matter of physiology can result in a basic acceptance of a mental disorder. And at the same time, acceptance can make it much easier to live with one’s condition.

I myself have experienced it very strongly in connection with a depression which I initially would not acknowledge, and for which I would not seek treatment. It was a sequence which began with a steady decline in mood that was impossible to restore. Eventually, it was no longer a question of melancholy and gloom; I was in a state of total and utter despair.

I could just manage to get up in the morning and drag myself through a day at work, but I fell apart as soon as I was alone within the confines of my own four walls. I could weep or just stare at a wall for hours on end and had a terrible sense of anguish. But I perceived it as external pain that was caused by unfortunate circumstances. I was unhappy because my life was a failure.

When I finally saw a doctor, however, she was not long in diagnosing depression that required treatment, and the treatment was one of the well-known SSRI antidepressants. And then things began happening. After a week, it was as if my raw pain had been wrapped in a layer of insulating cotton wool, and several weeks later my dark despair had totally disappeared. There were absolutely no external reasons for the change; not the slightest change in my life or my circumstances. It was only the chemical effect.

**The brain and the self-perception**

And this is precisely the point. The pills illustrated very clearly that my pain had a chemical and physiological content, and that it was not existential. It was not external. In any case, it is possible to change it chemically from the inside. When I saw myself as incompetent and the world as evil, it was because I was receiving the world through a specific chemical filter. And it was possible to change that filter.
Modern research shows that mental disorders arise in exactly the same way as diabetes, cardiovascular and other common diseases, namely as a combination of genetics and environment.

This insight has radically changed my view of life. Not that I have been cured of depressive tendencies – for they will always be there – but because I have had some sort of mental brake installed that enables me to avoid the downward spiral of thoughts that ends at the bottom. When the world begins to look gloomy, I can remind myself that my moods and feelings are ‘merely chemistry’ and in that way avoid a breakdown.

Understanding depression as processes in the brain has also opened the way for relating better to treatment. I do not see taking medicine as a defeat or a weakness, but rather see the medicine as a welcome aid on a par with a diabetic’s insulin.

Once this is acknowledged, it will have a major impact. Knowledge about the brain and its nooks and corners provides an entirely new and far deeper self-perception than we have ever had before. As a society, we will be much more understanding of people as such, and as persons we will penetrate far deeper into the greatest mystery of all – ourselves.

Biologist Lone Frank has done neurological research in Denmark and the United States. During the last nine years she has worked as a science journalist, partly with Weekendavisen and partly as a freelance contributor to journals in Denmark and abroad. She is also involved in radio and television and is a popular guest speaker and debater.

Lone Frank has caused debate with her books Det nye liv (The New Life) in 2004 and Klone Tigre (Cloned Tigers) in 2005, both of which deal with the attitudes of various cultures to biotechnology. Her most recent book Den femte revolution (The Fifth Revolution), published in 2007, focuses on the effects of modern brain research on society and the general view of human nature.
MY MISSION:
As member of the research management I continually assess and select particularly promising projects for Lundbeck's future research.

MY VISION:
I hope that I will be with Lundbeck long enough to see one of the projects I have started become a drug.
We put a great deal of effort into understanding why some patients respond to a compound while others do not. In Denmark, we are still doing research in compounds for treatment of schizophrenia, Parkinson’s disease and Alzheimer’s disease, while our depression research takes place in our own research company in the United States. In the long term, we expect that our new research strategy will result in a better understanding of the individual diseases.

It will be necessary for drugs of the future to target the needs of the individual patient to a much greater extent than the drugs we currently prescribe. One could say that in the future we will use a precision rifle with a telescopic sight, whereas we now use a shotgun. Doctors currently prescribe a dosage that helps perhaps 60 per cent of the patients. We believe that in the future it will be possible to make far more precise diagnoses and to select the drug that is most appropriate for the individual patient.

As Divisional Director of Molecular Neurobiology, I am a member of the research management whose job is to continually assess and select particularly promising projects for Lundbeck’s future research. In recent years, we have altered our strategy by collaborating on research with external partners at an early stage, and by including research in biological drugs.

We work on a long-term basis. When we initiate a new project now, it will hopefully lead to the launch of a new drug, but we cannot expect to market it before 2020 at the earliest. In other words, we must attempt to imagine what will be known about diseases and patients by that time and relate to where this progress takes us over a 15-year period.

I am convinced that Lundbeck has the resources and projects that are necessary to get us through to 2020 and to ensure our company’s success in the future.

New view of the patient
During recent years, Lundbeck has changed its research strategy so we now work with more types of projects than we did earlier. This change in strategy means that we now make greater efforts to understand the biology of a disease.

We put a great deal of effort into understanding why some patients respond to a compound while others do not. In Denmark, we are still doing research in compounds for treatment of schizophrenia, Parkinson’s disease and Alzheimer’s disease, while our depression research takes place in our own research company in the United States. In the long term, we expect that our new research strategy will result in a better understanding of the individual diseases.

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Biological drugs
Another important part of our new strategy is development of biological drugs – in other words, drugs that are made with the aid of a living organism – besides the drugs that are
produced with the aid of chemical synthesis. As of yet, Lundbeck is involved in three projects in this area, in which we intend to enter into strategic agreements to collaborate with external partners in the preliminary phase.

One of the compounds we are currently working with is known as CEPO. It is a modified form of the protein EPO which protects against brain cell death in the event of stroke – i.e. blood clots and brain haemorrhages. It is Lundbeck’s first biological drug and has been developed in collaboration with the American biotech company Warren Pharmaceuticals, Inc.

Another new compound is vaccinil – a protein for vaccination against development of Alzheimer’s disease. The vaccine targets the A-beta protein which causes deposits in the brain of Alzheimer’s patients, resulting in memory failure and death of brain cells. The vaccine has been developed in collaboration with the Danish biotech company Pharmexa A/S.

The third substance is desmoteplase – an enzyme which comes from the saliva of the vampire bat. The enzyme prevents blood from coagulating, and expectations are that it can dissolve blood clots which form in connection with stroke. Desmoteplase was developed by the German biotech company PAION AG and has been in-licensed by Lundbeck.

**Strategic partnerships**
The three new compounds are the results of strategic partnerships, and there will be many more of these partnerships in the years ahead. Among other things, we will collaborate closely in research with universities, which marks a significant switch in paradigm. We used to obtain knowledge from universities through scientific articles and meetings, or by collaborating with biotech companies that developed projects to maturity. However, diseases are so complex that we have now decided to outsource some of our early-stage research to the universities. In doing this, it is important that we remain in the driver’s seat and determine which areas of research are most likely to lead to the development of a new drug. We must identify the best laboratories and utilize innovation that builds on academic intuition and tradition.

An up-to-date example of strategic collaboration in identification of new and innovative research projects is our new partnership with Mayo Clinic in Florida, USA, on Alzheimer’s disease and Parkinson’s disease. In addition to this, we are also involved in major joint research projects on schizophrenia with the universities in Leiden and Nijmegen in the Netherlands, and in projects on Alzheimer’s disease and schizophrenia with the University of Aarhus in Denmark.

**Success criteria**
When working with long-term projects, it can be difficult to identify the greatest sources of job satisfaction. But I sincerely hope that I will be with Lundbeck long enough to see one of the projects I have started become a drug.

It makes me proud when I can see that we have chosen the right strategy, and that we – with the help of our professionalism and knowledge – are actively contributing to the development of drugs that will make a difference in people’s lives.
We believe that in the future it will be possible to make far more precise diagnoses and to select the drug that is most appropriate for the individual patient.
Anxiety is natural, panic is not

"Working as an anxiety therapist is very rewarding. Between 85 and 90 per cent of our patients improve permanently."

With this positive statement, one of Germany’s most eminent anxiety researchers, Dr Borwin Bandelow, underscores the fact that anyone with anxiety disorders will benefit from obtaining help.

"Anxiety is an entirely natural part of human heredity; it is necessary for survival. For example, research has shown that fear of snakes is genetic. It was necessary for our remote ancestors to determine quickly if something was dangerous in order for them to decide whether to fight or flee. This mechanism still works, but is often inexpedient today."

"Apart from the well-founded fear of terror, catastrophes, accidents or illness, there is the unhealthy anxiety which can get out of control. Persons who feel normal, natural anxiety have no need of treatment whatsoever."

"But anxiety that has no base in reality, or extreme anxiety for the commonplace which becomes so strong that it dominates daily life, requires help. This type of anxiety is meaningless and harmful."

There are three types of anxiety disorders that result in individuals seeking the help of a psychologist or a psychiatrist:

- panic anxiety disorder (PAD), often associated with agoraphobia; the fear of open or public places, or crowds of people
- generalized anxiety disorder (GAD), such as mothers fearing for their children being hurt in traffic, on a journey, or walking in a park, despite the children being at home
- social anxiety disorder (SAD), which is interpreted as extreme shyness and fear of not being good enough.

"Simple phobias such as the fear of snakes, spiders or white mice do not necessarily need to be either fought or treated. It is possible to live with them."

"But when a person is suddenly stricken with panic involving physical symptoms such as shivering, giddiness, high pulse rate and shortness of breath, they see a doctor. Initially, they go to their own doctor and not to a psychiatrist. Most of my anxiety patients have seen a doctor for an average of three-and-a-half years when they come to me. During that time they have been thoroughly examined without any physical cause of their symptoms being found."

"Approximately 10 per cent of the population experience a panic attack once in their lifetime, and never again. But, according to international classification, it is panic anxiety if a person has four panic attacks per month involving physical symptoms, and if the person increasingly attempts to avoid situations in which it would be difficult or embarrassing to obtain acute medical help – perhaps in the event of collapsing in the presence of a large group."

"It is possible to help persons with this type of anxiety. Treatment does not initially aim at a cure. The primary goal is to enable the patient to live with the disorder and to improve his or her quality of life. It is also a matter of helping patients with panic anxiety disorder to get through the worst phase. Experience and statistics both show that most panic disorders disappear between the ages of 45 and 50. The symptoms normally begin when patients are in their 20s and top when patients are approximately 36 years of age."
“Anxiety and panic affect not only the quality of the patient’s life to a lesser or greater extent, but also that of family and friends. The more that the contact to the outside world is reduced, the more the patient’s employment and marriage or relationship are in danger.”

“Especially the spouse becomes involved in the disease by having to accompany the patient who dares not go out alone. Inadvertently, the spouse thus contributes to maintaining the patient’s behavioral patterns by avoiding situations that trigger anxiety. When we work with confrontation therapy, I must often ask the spouse to help by not helping the patient.”

Therapy consists of two things: medication and behavioural therapy in which the patient is confronted with situations that trigger anxiety. This is what we call best practice today. One of the problems in medication is the side effects which occur during the first two weeks; first and foremost the restlessness which arises before the medicine has the desired effect after two to four weeks. The medication must be taken for approximately twelve months. Behavioural therapy usually takes six months and should not exceed one year.

“After one year in therapy there is usually no more therapeutic progress, and the patient must not become dependent on the therapist. Some patients fear that antidepressants will cause dependency and changes in personality. This fear is unfounded, and doctors should endeavour to wipe out this widespread and unwarranted concern regarding modern antidepressants.”
MY MISSION:
To provide scientifically correct information about psychiatric and neurological diseases and their treatment.

MY VISION:
My goal is to help people suffering from depression get the treatment they need to get well.
Eric Wainwright is a psychiatrist and has worked as Medical Advisor for Lundbeck Argentina since 2002. He is responsible for education about depression in Argentina and Chile, where up to 60 per cent of those who suffer from depression go untreated. The online community DepNet is an important tool in this education.
An estimated 12 per cent of the population in Argentina and 25 per cent of the population in Chile suffer from depression. But only around 40-50 per cent of these people receive treatment, and mostly only when the disease is very severe.

My goal is to help people suffering from depression get the treatment they need to get well. I believe I will have helped achieve something if in ten years' time depression is a condition that is free of stigma and is easily recognized and diagnosed in this region. Every additional person who gets the right treatment for depression is a milestone in itself.

Depression is a disease encumbered with great costs, both in terms of loss of productivity when people are unable to work and the subsequent cost to the depressed person's family in financial as well as emotional terms. Depression mainly affects adults in their productive years who suddenly find that they cannot bring in an income or take care of their families. Ultimately, people with untreated depression are at risk of losing their jobs, their spouses, and their families. Untreated depression is terrible for those affected.

I believe that the main reason why so many people suffering from depression do not seek or get treatment is lack of knowledge about the disease. In most cases, people are not even aware that they are seriously ill. They find it hard to accept that they are ill and especially ill with something related to the mind like depression. Furthermore, many general practitioners are not aware of how serious depression is – that is why physicians need to be educated as well. In Argentina, for instance, everyone has access to a public hospital if they are prepared to wait, so if you are aware of your depression you can actually get treatment.

**Online community**

We created DepNet in Argentina and Chile in 2006 to help us provide doctors and patients with specialist knowledge about depression. It is an online community on the internet that provides in-depth information about depression written by specialists. Approximately 40 per cent of the population in Argentina and 43 per cent in Chile have access to the internet, so we believe it has quite a good reach.

We believe that DepNet can help increase the number of people treated for depression by making general practitioners aware of the symptoms of depression. We also believe that people who are concerned because they or their relatives or friends are experiencing low mood, diminished energy or any of the other symptoms associated with depression will be able to benefit from the information available on DepNet. Not everyone feels comfortable consulting a doctor if they are experiencing mood or mental problems, and it is common for depressed persons to feel isolated and alone with their problems. DepNet also has a much-used diary feature, where users record their day-to-day feelings and share experiences, and this tells users that they are not alone.

But DepNet also makes it clear that you should involve a physician. It is not enough just to read the information and participate in the diary writing on DepNet. It can and must never replace psychological or pharmacological treatment. The message to patients is: if you are depressed, you need treatment. Drug therapy and psychotherapy are the most important tools to recovery.
Reaching the target groups
Creating an online community is of course not enough. We have to let people know that it exists. We reach the physicians through our sales representatives who mention the website when they visit. We reach potential patients and relatives through internet blogs, advertisements in magazines, and through what we have found to be the most successful way - leaving pamphlets about DepNet in non-psychiatric areas of hospitals. People have come to the hospital as relatives or because they suffer from other ailments; yet the pamphlets disappear and we keep printing and delivering new ones. We take this to mean that the information about DepNet is considered relevant by a lot of people.

DepNet is free of commercial interests and does not promote Lundbeck’s pharmaceuticals in any way. To us, the important thing is to help patients get the right treatment regardless of whether that is psychotherapy or medication. Users of DepNet are not influenced to buy specific products or undergo any specific treatment. In Argentina, people are used to things being mostly commercial so we believe that part of DepNet’s success is that it is an independent source of information.

DepNet in Argentina has about 1,900 visits a month, the majority of which are patients, but some are physicians. The site in Chile has about 500 visits a month. I monitor the diary entries and many of the writers express in their diaries that they find DepNet really useful.

Now that we have launched DepNet successfully in Argentina and Chile, we plan to create DepNets in Venezuela and Central America based on the same concept. The more awareness there is about depression, the more people will be treated for this serious condition.

About DepNet:
DepNet is an online community on the Internet where people affected by depression can find information and help as well as exchange experiences. It was created by the Lundbeck Institute, which works non-commercially to help improve the quality of life for patients suffering from diseases of the central nervous system.

There are currently DepNets in 17 countries. For links to DepNet sites see depnet.com
Cristina’s story

Cristina lives in Buenos Aires in Argentina. She is 60 years old and suffers from depression and anxiety.

I started suffering from depression and anxiety after my husband Juan Carlos became seriously ill. He had a heart attack when he was only 53 years old and the heart surgery went wrong. His brain was damaged. I accompanied a beautiful, strong and intelligent man to hospital and took home someone who looked and behaved like a child. He had become incapable of looking after himself.

**From devoted wife to dedicated caregiver**

I took care of my husband at home. Juan Carlos had established his own business and had no medical insurance, so we had access to very little help and no income. We had to sell our apartment and our car. I was constantly worried. Juan Carlos wasn’t getting any better and I would hardly ever leave the house as he would wander off and get lost if I didn’t keep an eye on him. I would run to the supermarket and back.

Soon I became depressed and started suffering from anxiety. Only I didn’t know what to call it at the time. All I knew was that I cried all the time and the few times I left the house I had panic attacks in the street. I also stopped changing my clothes and washing adequately and couldn’t relate socially to anyone but my husband.

**If you look well...**

We have an expression here that says that if you look well, you are treated well, which also means that if you do not look well you are not treated well. During Juan Carlos’ illness our friends gradually disappeared. That taught me to keep my problems and thoughts to myself in front of our few remaining friends. A person who suffers from depression and anxiety is a person who lies. But it got worse and worse. I isolated myself from the world to avoid panic attacks. I was no use to anyone anyway. Anxiety breaks you down. In the end I went to a psychiatric unit. The psychiatrist asked me if I wanted to die. I said no. It was then that I realised that I should take my own condition seriously. I started to take medication and attended regular consultations with a psychiatrist.

**Sorrow brings it back**

I had been receiving treatment for my depression and anxiety for two years when Juan Carlos died suddenly, aged 62, after nine years of illness. Even though he had been very ill, I missed him terribly. We had been married for 37 years. My depression and anxiety came back with great force. I stayed at home with the radio on so as not to feel that I was alone. I did not want to be a burden to my sons who had also suffered throughout their father’s illness. But this time I knew that I should speak to a psychiatrist immediately.

**Every day it gets a little better**

Fortunately, although I am not completely well, my health is better now. I am a Catholic and believe God has helped me recover. But I am also eternally grateful to my psychiatrist. I am taking the medication that he has prescribed and I have taken his advice and started some new activities. I now play golf, do yoga and go for walks. I have one very good friend with whom I go on short trips. I have Juan Carlos’ pension so I am financially comfortable. And I have even started dreaming of getting a house by the sea.
“I have even started dreaming of getting a house by the sea.”
MY MISSION:
To establish Lundbeck as the best pharmaceutical company in the region.

MY VISION:
To become a role model in the pharmaceutical industry. I would like to show that it is possible to combine professionalism with high business ethics.
There are 120 million persons in the countries that make up the Lundbeck Middle East region: Egypt, Saudi Arabia, the United Arab Emirates, Qatar, Bahrain, Oman and Kuwait.
Mourad Mohamed Aly is Managing Director of Lundbeck Middle East.

Mourad has a degree in medicine and has worked as a doctor for two years at hospitals and a private clinic.

"However, my temperament is better suited to business life, so I studied business and did an MBA."

"I am a perfectionist, and I always try to achieve the very best results. As Regional Manager, I must ensure that Lundbeck’s business and subsidiaries develop in every aspect."

A good example
"My professional aim is to establish Lundbeck as the best pharmaceutical company in the region. We will achieve this through fair marketing and by being a strong and well-defined organization with clear systems and procedures. We will attract the most talented staff members, develop our team, and create a good and inspiring working environment."

"My personal goals are nearly the same. I feel that I have a mission in our region and in Egypt, my homeland. Here we lack professionalism. My goal is to become a role model in the pharmaceutical industry. I would like to show that it is possible to combine professionalism with high business ethics. When our staff members go on to jobs in other companies, they must take our ethical standards with them. I want Lundbeck to be a good example."

Cuckoo
There is enormous prejudice against psychiatric disorders in Egypt.

"Even in the media one can come across attitudes that are very prejudiced towards persons with a psychiatric illness. The common perception of psychiatric illness is that the patient is cuckoo, and that the condition is incurable."

"We would very much like to help change that attitude. For this reason, we are collaborating with DANIDA – the Danish foreign ministry's development organization – on a project to improve the possibilities for persons with a psychiatric disorder to obtain treatment. The project is being implemented in collaboration with many organizations – including the Egyptian Psychiatric Association and, even more significantly, Egypt’s Ministry of Health, which is showing growing interest in the area, following several years of seeming indifference. Lundbeck has been invited to take part because we are specialists in this area."

"We want to improve the climate for treatment of persons with psychiatric disorders in Egypt. Egyptian legislation in the area is outdated and useless. For example, a person cannot be discharged from a psychiatric hospital without written permission from the family. We want people to be able to use the psychiatric hospitals in confidence. As things are now, patients are very ill indeed when they finally seek treatment."

"We will fight stigmatization through better education of doctors and by ensuring that patients as well as their families and friends receive information on their illness."

"Our message is that a psychiatric illness is fully comparable with a somatic, i.e. a physical, illness. A psychiatric illness requires a diagnosis, and there is no reason to be ashamed of being mentally ill."
“Together with the Lundbeck Institute, we have established a branch of the institute in Sharm el Sheik, which has a faculty of 100 specialists from the seven countries in our region. They have now held seminars for approximately 2,000 physicians. In this way we are helping to provide further training for many doctors.”

**My ten-year perspective**

"Ten years from now, I believe Lundbeck will be the CNS leader in the Middle East. With all the new products we expect to have during the coming years, we will be a significant player in the pharmaceutical industry. And at the same time, Lundbeck will be perceived as a responsible company – a company that has a social conscience, and a company that plays a role in society. We will have contributed to the understanding of psychiatric illnesses and their treatment. And we will have expanded our many activities to the benefit of society – for example through the pharmaceutical companies’ association, the careers advisory council where I am active myself, and through our collaboration with DANIDA.”

"When I know that Lundbeck has attained a reputation among doctors as being the best in the market, I will be proud of my work. Proud when I see the results of our work and see our staff members changing and developing as they grow with their tasks. This is a truly wonderful feeling.”

"Even in the media one can come across attitudes that are very prejudiced towards persons with a psychiatric illness. The common perception of psychiatric illness is that the patient is *cuckoo*, and that the condition is incurable."
Wahiba Tharwat Mohamed Gebriel is Sales Manager of Lundbeck Egypt.

Wahiba is head of the Lundbeck Egypt sales team which numbers 22 sales representatives, a product field manager and three district managers.

"My job is to establish a sales system that makes it possible for Lundbeck to maintain its position as market leader in Egypt. My focus is to develop our sales force. Here at Lundbeck Egypt, we believe human resources are our greatest asset."

"Achieving success and excellence in everything I do is very important to me. I am proud when we are successful – and by that I mean successful in all aspects. It is also a success if I can help others to develop and to reach their goals. I am very proud when things go well for my team."

A veterinarian
Wahiba has a degree in veterinary medicine.

"But I did not want to be a veterinarian and chose to become a pharmaceutical sales representative instead. Because I was certain I would be more successful as a business woman, I began studying again and got an MBA in HR Management."

"I joined Lundbeck Egypt as a product specialist in 2004. In 2006 I became a district manager and, in 2007, a sales manager."

Female executive
"I have two types of goals: professional goals and personal goals.

My professional goal is to establish Lundbeck as a model pharmaceutical company in our region. We can achieve this by implementing Lundbeck values in the market, by attracting top calibre staff, and by developing our efficiency as a team."

"At the personal level, I want to be an example of a successful businesswoman. My goal is to become a senior executive, for example to lead a pharmaceutical company or to be an executive director of marketing."

My ten-year perspective
"In 10 years, Lundbeck will be widely known.

We will have a large sales force that works with many of the compounds which are currently in our pipeline. I am confident that Lundbeck’s business will have grown, because there will be a greater awareness of psychiatric illnesses in our society."

"We expect there will be many different types of initiatives to improve treatment of psychiatric illnesses and that we will have established Lundbeck as the leading CNS company in the Middle East."

"All our activities deal with the improvements that are on the way in the treatment of ‘our’ illnesses. This is our opportunity for growth and for personal success."

Wahiba Tharwat Mohamed Gebriel is sales Manager of Lundbeck Egypt. wahiba is head of the Lundbeck Egypt sales team which numbers 22 sales representatives, a product field manager and three district managers.

"My job is to establish a sales system that makes it possible for Lundbeck to maintain its position as market leader in Egypt. My focus is to develop our sales force. Here at Lundbeck Egypt, we believe human resources are our greatest asset."

"Achieving success and excellence in everything I do is very important to me. I am proud when we are successful – and by that I mean successful in all aspects. It is also a success if I can help others to develop and to reach their goals. I am very proud when things go well for my team."

A veterinarian
Wahiba has a degree in veterinary medicine.

"But I did not want to be a veterinarian and chose to become a pharmaceutical sales representative instead. Because I was certain I would be more successful as a business woman, I began studying again and got an MBA in HR Management."

"I joined Lundbeck Egypt as a product specialist in 2004. In 2006 I became a district manager and, in 2007, a sales manager."

Female executive
"I have two types of goals: professional goals and personal goals.

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H. Lundbeck A/S has been represented in the Middle East for 20 years, although independent Lundbeck subsidiaries have only been established in the region during recent years. Lundbeck Middle East employs a total of 84 staff members.

There is no reimbursement for medicine in any of the countries in the region. In hospitals in Saudi Arabia, however, citizens receive medicine free of charge.

Lundbeck Middle East established the Lundbeck Institute Middle East Chapter in September 2006. The purpose of the institute is to contribute to improving quality of life for patients suffering from psychiatric and neurological diseases.

The Lundbeck Institute was founded by H. Lundbeck A/S in 1997 as an independent institution. The Lundbeck Institute is the only institute in the world that offers physicians and health care professionals the opportunity of sharing their knowledge and learning from each other’s expertise and experience in the context of a week-long seminar.

Participants in these seminars are subsequently given access to all the course materials, enabling them to arrange similar educational activities for colleagues in their own countries. The aim is that the participants spread their knowledge and experience to as many other health professionals as possible. This model is known at the institute as the educational cascade.
Jes Trygved has lived and worked in Moscow as Managing Director of Lundbeck Russia for nearly four years. He is now back at headquarters in Denmark, where he heads the neurology team.
MY MISSION:
I had to make sure that we have good staff members who can ensure our future as a company in Russia.

MY VISION:
I focus on doing my job well wherever I happen to be at any given time.

PHOTO: LAAS BECH
originally, Jes Trygved was supposed to work only six months on a project at the Lundbeck office in Moscow where a subsidiary was being established. Jes’s assignment was to compile the business plan for activities in Russia.

“But after a couple of months, it became evident that we needed more than a mere plan, so in March 2004 I became Managing Director of Lundbeck Russia, including the CIS countries.”

“That was fine with me, as I wanted to live and work abroad. I have a MSc degree in marketing and joined Lundbeck in 2002. I worked in the Business Support Department for two years with Lundbeck’s subsidiaries in Germany, Austria and Switzerland, as well as with Eastern Europe.”

Follow where opportunity leads

“I can’t actually say that I have clear professional goals. I focus on doing my job well wherever I happen to be at any given time, and I appreciate my commitment being noticed. I like challenges, but I do not aim to reach any particular position. I intend to follow where opportunity leads.”

“Funnily enough, that is also the way to survive in business in Russia. Therefore, I am happy to have a combination of experience from both Western and Eastern markets; it is also important to have experience from a developing country. Russia is a developing country, with tremendous progress in all areas – also in CNS.”

Short validity

“In Russia it is possible to create many short-term contacts, but things change quickly and a current reimbursement programme for pharmaceuticals may not be valid a month later.”

“There are approximately 140,000 General Practitioners in the entire country to serve approximately 145 million inhabitants. At the moment, the total reimbursement programme for all drugs amounts to only DKK 9,1 billion. This restricts many patients’ access to drugs.”

At Lundbeck Russia we work primarily with specialists, and our sales representatives must be experts in our products, as well as in finding and selecting the doctors who have both the possibility of treating patients with our products – and the will to do it. Therefore, most of the sales representatives are doctors themselves.”

Difficult for persons with psychiatric disorders

“There are many psychiatric hospitals in Russia, but their reputation is tarnished because they were often used for confining dissidents during the Soviet era. Times are different now, but life is still difficult for persons with psychiatric disorders in Russia. Hospitals do not receive much money, and patients are often treated with drugs which have been on the market for a long time. There are 15 psychiatric hospitals in Moscow, and persons with psychoses are often kept in hospital under miserable conditions for many years because there are no programmes for helping them to re-enter society.”

“However, treatment of persons with psychiatric disorders is recognized in Russia, and there is a long tradition of research in this field. On the other hand, treatment of depression is still relatively new, and ordinary General Practitioners presumably have difficulty diagnosing it. In collaboration with the Lundbeck Institute, we have therefore
made a great deal of effort to train specialists in diagnosing depression and defining treatment."

"In Russian society today, there is a great deal of focus on health. Vodka and tobacco have taken their toll, but modern Russia is different, and young Russians want another lifestyle."

**Best in English**

"During my years in Russia, I have learned a little Russian, but it has not been a goal for me. It has been more important that my staff speak English well."

"As Managing Director one is given targets every year – for the short term and for the long term. Short-term targets are to create growth and results. But the long-term targets are the most important. I was to make sure that we have good staff members. I was to coach, advise and help the staff members who are to ensure our future as a company in Russia."

"Hiring talented staff members is the most difficult, especially if they are more capable than you are yourself. But if your staff members are not winners, you cannot be a winner yourself."

"People have been very important in my daily life as managing director. Many circumstances in Russia make people the most significant part of one's everyday life – both at the office and elsewhere."

"Our common goal is to create a positive image for the company, because Lundbeck will be in Russia for many years to come. We are building on our platform as specialists in CNS."

**My ten-year perspective**

"I very much hope that far more patients will have access to our drugs when they need them. My best experience was a recent visit to a hospital in the city of Ufa in Ural. Here, a group of doctors thanked me for Serdolect® – our antipsychotic – because their patients were doing so much better. They had got back their lives – an ordinary, everyday life – the doctors said. I was very moved. We do make a difference. And that's important."

"During the coming years there will be tremendous progression. Doctors in Russia will acquire better equipment and become better educated. Russian incomes will rise. The government is attaching increasing importance to health, and the situation of the average person will improve."

"I myself have now continued on my way – as director of the Lundbeck neurology team in Strategic Marketing. That is my next step."
The Lundbeck Foundation increases donations to research

The Lundbeck Foundation is one of the largest contributors to public sector health research in Denmark. In merely 10 years, the curve of donations from the foundation has risen sharply from approximately DKK 20 million annually, to the current annual figure of some DKK 350 million.

In 2007, The Lundbeck Foundation donated DKK 281 million to projects in the field of health science. The Board of Directors of the foundation has announced that it will donate DKK 1 billion over the next three years. The funds are to be donated to projects where they will make a significant difference.

The Lundbeck Foundation is the majority shareholder in H. Lundbeck A/S, with a holding of approximately 70 per cent. The foundation was founded in 1954 by Mrs Grete Lundbeck, the widow of the founder of the company, Mr Hans Lundbeck.

The foundation currently has an equity of some DKK 35 billion, but it leads a relatively quiet existence in a patrician villa in the North Copenhagen suburb of Hellerup, from where 10 employees run its daily affairs. The foundation’s Director of Research during the past three years is Erik Juhl, former chief physician at Hvidovre Hospital in Copenhagen and former Managing Director of Copenhagen County University Hospitals.

A need for private funds

"The Lundbeck Foundation has two primary tasks: to safeguard and expand the operations of the Lundbeck Group, and to provide financial support for high-quality research. As a foundation that operates a business, we provide financial support for public sector research, especially in the health sciences. And to receive funds it is a condition that research results are published and made available for everyone," Erik Juhl explains.

"Denmark is a small country, but it is important that we contribute actively to basic research in the health sciences. If we are not actively engaged in the development, we will not be able to reap the benefits of progress in this area. Without independent Danish research and development, our health system will eventually lag far behind."

"We have noted with satisfaction that government support for health science research is rising. But there is obviously still a need for private funds. We can see that in the quality of the applications we receive," Erik Juhl continues.

Increase in donations

The Lundbeck Foundation recently decided to donate DKK 1 billion to research in the health and natural sciences during the next three years (2008-2010).

"Regardless of the fact that public sector appropriations are expected to rise during the coming years, we believe that there is still a need of financing for high-quality research in Denmark. The increase in donations will enable the foundation to continue its strategy of supporting establishment of research centres, as well as making donations to projects," Erik Juhl states.

In 2007 and 2008, the foundation will support establishment of research centres whose aim is to make the results of basic science research available for patients faster and more efficiently. The large research centres are five-year projects and are monitored on an ongoing basis.

Selective and quick financial support

"In comparison with government funding, a private foundation has the advantage of being able to act quickly and more selectively. We can focus on specific areas. In this way, I believe the government and the Lundbeck Foundation
supplement each other. Our success criterion is that our donations must make a difference. We prefer to make large donations to a relatively small number of projects, rather than donating small amounts to many projects. Moreover, we endeavour to be independent, and attach great importance to professionalism in our donations. We do this by donating funds where we think they will be most beneficial and where there are no other possibilities of obtaining financial support.”

“The Lundbeck Foundation does not make donations on the basis of narrow corporate interests. Our commercial research and development take place within the company. For this reason, we do not provide aid for pharmaceutical testing or for research in other commercial companies. As Denmark’s possibly largest source of support for health science research, we feel that we bear a significant responsibility. Financial support must be given on the basis of professional, independent considerations. Support is granted on a scientific basis.”

Want to attract experts
The strategy for the coming years does not mean that the Lundbeck Foundation will only increase its donations. The foundation will also identify focus areas for the coming donations to research centres.

“We are also focusing on ways of attracting more researchers to Denmark. We would very much like to encourage a little more brain circulation. As things are at the moment, especially the best research centres in the US attract many of our best brains. And this is good. It is important that our experts acquire international knowledge. But we would also like to encourage domestic research by making it more attractive for particularly promising young Danish researchers,” Erik Juhl says.

The Lundbeck Foundation has therefore established several new grants of DKK 10 million each to be given over a five-year period. Promising young researchers in their 30s and their research groups can apply for these grants. The grants will make it possible to establish research groups – or for research groups to continue their work – in health or natural sciences. The foundation received 60 qualified responses to its most recent call for applications.
Clinical studies are very important in the development and regulatory approval of new drugs. The regulations for documentation of safety and efficacy are international and include clinical studies that involve thousands of patients.
**MY MISSION:**
To ensure that everything in Lundbeck’s International Clinical Research organization in Asia functions.

**MY VISION:**
We must be the leading company in knowledge of the disorders with which we work.
Clinical studies
Clinical studies are necessary to document that all new drugs are safe and efficacious. Such documentation can only be obtained by investigating drugs in clinical studies in which patients are treated with the test drug in carefully controlled clinical trials.

Clinical trials are conducted in three phases.
Phase I trials are conducted with healthy volunteers – and involve a modest number of persons – to establish if a drug is safe and how it is metabolized by the body.

Phase II trials are controlled studies in a few patients. The aim is to establish efficacy and determine the optimal dose.

Phase III trials are large-scale studies that typically include more than 1,000 patients. They chart the efficacy and safety of a drug in clinical use. In phase III trials, a compound is often compared with a similar substance and with placebo.

Lars Nelleman, MD, is Regional Medical Director of Lundbeck Asia Pacific.

"I worked for five years as a medical doctor and anaesthetist in Copenhagen. I began my career in clinical research at Novo Nordisk. After working with clinical research for seven years in Denmark, I moved to Singapore where I have lived and worked for the last 13 years."

"Since I joined Lundbeck approximately five years ago, I have built up Lundbeck’s International Clinical Research (ICR) organization in Asia. Today we have employees in 10 countries and a total of 70 staff members who are all specialists in clinical research."

Ethical rules
"My task as head of the organization is to ensure that everything functions. It is vital that everything takes place in accordance with stringent ethical rules, as well as in accordance with Lundbeck’s vision, mission and values."

"We must supply the clinical study data that Lundbeck needs to obtain regulatory approval of our drugs in the US and Europe, as well as in China, Taiwan, Korea and India – all of which have their own regulations on clinical studies of their own citizens."

Most countries accept the results of clinical studies made in the United States and Europe, but some Asian countries require studies that have been made among their own populations.

"Naturally, we combine all the results we get – they are equally valid regardless of their origin. We find doctors with whom we can work and design protocols for them to follow during a study. The doctors then identify the patients and collect data."

"The big advantage for patients participating in a study is that they get excellent treatment. They are a kind of VIP patients who have direct access to the doctor and are examined extra carefully."

"Should complications arise during our studies, we cover the costs. In our case, however, complications are extremely rare because the drugs we work with are very safe."

"Many patients improve considerably when they are part of a study. In cases where we can see that it could have negative consequences for a patient to discontinue the study, we often offer them the option of continuing in an extended study."

Meticulous care
Lundbeck Asia Pacific will account for approximately one-third of the patients in future clinical studies at Lundbeck.
“We attach enormous importance to being meticulously careful with regard to ethical regulations. We work in developing countries, and the patients are vulnerable in a number of ways. They are psychiatric patients, and perhaps also very poor. For this reason, we are extremely careful when we select clinics and doctors. We collaborate only with well-reputed clinics and doctors who comply with the international conventions and regulations for clinical studies with humans.”

The rules for clinical trials spring from the Nuremberg process which led to rules on how experiments with humans must be conducted. Today, nearly all countries have their own Good Clinical Practice (GCP) standard. There are no countries where it is possible to ‘sneak in’ and conduct unethical trials.

**Ethnic differences**

“In addition to clinical studies, we have begun designing scientific studies to determine if there are ethnic differences in depression and other psychiatric disorders. This is more deep basic research in the disorders we work with. I see this as my contribution to fulfilling our vision of being the leading CNS company. With this as our ambition, we must also be the leading company in knowledge of the disorders with which we work.”

“Psychiatric research is diffuse, but we will have a look at individual and cultural self-perception. We do not know if there is any difference: depression may occur in the same way in all patients or ethnicity may play a role.”

“In the short term, the answers to these questions influence the way in which Lundbeck designs its trial protocols – and perhaps the way in which doctors prescribe medicine, possibly in combination with therapy. In the long term, the studies may lead to the beginning of differentiated treatment and the offering of various treatment options.”

“It is not an area we have invented. Research is already being done to discover if there are genetic and biological differences among various ethnic groups, but this type of research is most common in highly developed countries. Here, we have the opportunity of contributing with something quite different.”

**My ten-year perspective**

“Ten years from now, ICR Asia Pacific will be even stronger. And Lundbeck will hopefully have achieved the position we are striving to attain as the leading company in CNS.”

“The progress of communication technology means that we will be even more closely integrated with headquarters in Denmark. In fact, we already have employees who are part of the team in Denmark, but who are physically here in Singapore.”

“As Medical Director, I am proud when good staff members decide to remain with us, and when others join us. It is a real pleasure when headquarters notices my staff members’ efforts to ensure that we supply high-quality data on time.”
**MY MISSION:**
To ensure that Lundbeck always has the best possible suppliers.

**MY VISION:**
To reduce Lundbeck’s costs. But a good price must never be to the detriment of our values or quality.
Following three years of intensive spadework, Lundbeck has contracted with two new suppliers in India. Everything must be in order when Lundbeck selects a new supplier.
y job is to ensure that Lundbeck always has the best possible suppliers that manufacture products in a justifiable manner for our chemical production, while also supplying high quality at a competitive price. Security of supply must also be top-notch. Patients must always be certain of getting their medicine, and environmental, health and safety conditions must also be satisfactory.”

Inge Knudsen has a degree in Civil Engineering from the Technical University of Denmark, with microbiology as her main subject. As Sourcing Manager at Lundbeck, she identifies suppliers, negotiates contracts, and maintains ongoing contact with the companies around the world that manufacture the compounds used in Lundbeck products.

Inge was recently in India to sign contracts with two new suppliers; contracts that will ensure significant annual cost savings for Lundbeck. The new suppliers will produce one of the basic components of escitalopram. Both companies have been selected after three years of intensive spadework, as there are many conditions which must be in order when Lundbeck selects a new supplier.

**Safe conditions**
"Price is important, of course. One of the aims of my work is to reduce Lundbeck’s costs. But a good price must never be to the detriment of our values or quality."

"To ensure quality, we require that production takes place under justifiable conditions. Lundbeck’s mission is to help people who are ill. Therefore, it would never do if we were to inflict harm on other people. We must be absolutely certain that employees’ health does not suffer and that the surrounding environment is not polluted by the production of our drugs."

**OK to require certain standards**
"For this reason we audit our suppliers at regular intervals – potential suppliers as well as those who already work with us. Does the workplace meet our environmental, health and safety standards? Is there any child labour? Do the employees receive decent salaries they can live on? These are just a few of the questions we require suppliers to answer."

Inge makes it clear that establishing collaboration with a supplier can be quite a lengthy process. However, Lundbeck is willing to invest the necessary time, provided the management of a company has the right attitude and wishes to meet Lundbeck standards.

"I find working abroad and seeing other ways of looking at the world very rewarding; one really learns something from that."

"But requiring certain standards is definitely OK. And companies have nothing against it, either. They are interested in learning from us, because it improves their chances the next time they compete for an order."

**Good relations**
"All in all, I believe it is essential to have good personal relations with the suppliers. Good personal relations help keep things moving smoothly and make it easier to help each other at a pinch. I have personally benefited a great deal from meeting our suppliers around the world. Discussing children and family during a three-hour trip by car or an invitation to a wedding in India can give fascinating insight into other cultures."
I find working abroad and seeing other ways of looking at the world very rewarding; one really learns something from that.

There is also some very visible evidence of Inge’s visits to India. As a symbol of good collaboration, one or more trees bearing her name are planted every time Inge makes a visit. And trees grow quickly in India. In fact, many of them are already taller than Inge.

"And there will no doubt be more. We are still expanding our network of suppliers. So perhaps there will someday be a forest in India named after me."
The sleep command centre

Our built-in biological clock controls our sleep, and the hormone melatonin tells us that it is time to sleep.
The human biological clock is located above the crossing point of the optic nerve behind the eyes. And this is where the timing of sleep is controlled. This is the command centre for production of a number of hormones and neurotransmitters, including melatonin – the so-called 'hormone of darkness'.

"Sleep is a neuro-chemical process that involves a number of areas in the brain, and our inner biological clock is located in the suprachiasmatic nucleus of the hypothalamus above the crossing point of the optic nerve behind the eyes. From nature's hand, the clock is set to complete a cycle of just over 24 hours – also known as the free running circadian period. And it is light that fine-tunes the clock, so our circadian rhythm is tuned to the day's 24 hours," explains Nava Zisapel, professor at Tel Aviv University. She has for many years studied the hormone melatonin and its significance in getting a good night's sleep.

"Sleep is a neuro-chemical process that involves a number of areas in the brain, and our inner biological clock is located in the suprachiasmatic nucleus of the hypothalamus above the crossing point of the optic nerve behind the eyes. From nature’s hand, the clock is set to complete a cycle of just over 24 hours – also known as the free running circadian period. And it is light that fine-tunes the clock, so our circadian rhythm is tuned to the day's 24 hours," explains Nava Zisapel, professor at Tel Aviv University. She has for many years studied the hormone melatonin and its significance in getting a good night's sleep.

Scientists have long known that melatonin plays a role in sleep. It is formed in the pineal gland, and there is a high concentration of the hormone in the blood during the night.

"It is one of the body's signals to us that it is time to sleep," Nava Zisapel explains.

The hormone of darkness

As such, melatonin serves as a signal of darkness in the organism in setting the internal clock phase, and is consequently connected with circadian rhythm and the inner clock in regulating day/night bodily functions, including our sleep.

When we experience jet lag, our biological clock is still set to the old time zone and must have time to resynchronize with the new light/darkness cycle, and this results in sleep problems. Shift workers can also experience difficulties in sleeping for the same reason. This is partly because we are not designed to sleep during the day and be awake at night, and partly because turning our day around upsets our biological clock.

"Blind persons also have problems with their inner clock, because they do not have light to regulate it. Their biological clock free-runs, and their day and bedtime drift to later hours from day to day," Nava Zisapel continues.

It is also important to note that the biological clock can be set differently from person to person. For example, the free running circadian period of larks* is shorter than that of owls. Their inner clocks run too fast or too slow, respectively, in relation to the official time. "If it is only a matter of one or two hours, it isn't a problem, but in extreme cases of several hours a day, it is a case of early or delayed sleep phase syndrome. Both can be difficult to live with on an everyday basis," Nava Zisapel says.

Less melatonin in the blood

Besides other anatomical and physiological changes in the brain, the level of melatonin falls with age. While this is natural, according to Nava Zisapel, it gives many persons sleep problems. This can be both because it is more difficult for them to fall asleep and sleep through an entire night, and because their sleep pattern changes so they no longer sleep as deeply as they did before.

"Between 30 and 50 per cent of elderly persons have insomnia, and the incidence in women is twice as high as in men. In about 50 per cent of these cases the insomnia is severe," Nava Zisapel states, adding that the definition of insomnia is the difficulty to fall or stay asleep or to have bad quality sleep more than three times a week for more than a month.

* A LARK IS A PERSON WHO HABITUALLY GETS UP EARLY IS OFTEN CONTRASTED WITH OWL.
A good night’s sleep

Normal sleep consists of a series of stages which are repeated a number of times during the night. First, one falls into a drowsy sleep. One can have a foretaste of dreams and perhaps wake with a start. In the next phase, one sleeps lightly without thoughts and dreams, before continuing into an increasingly deeper sleep. During deep sleep, the pulse, blood pressure and temperature fall, and one is difficult to wake. Following the deep sleep stage – approximately 80 minutes after one has fallen asleep, sleep lightens and one begins dreaming. This is REM sleep (rapid eye movement). In this stage, the muscles are normally extremely relaxed – limp – so one does not risk enacting one’s dreams in violent movements.

Biorhythms

Circadian rhythm is one of nature’s biological rhythms that have been inherited by humans for millions of years. Circadian comes from the Latin circa (approximately) and dies (day). Circadian rhythm is controlled by our built-in clock and is tuned with the day/night cycle through the eyes and through light.

"Doctors may say that not sleeping as long or as well is normal in elderly people. That may well be true if one functions well and is comfortable during the day. However, the problem is that many feel indisposed and tired during the day and are decidedly unwell from not sleeping at night. It is also known that persons with insomnia seek medical help for other illnesses six times more frequently than do persons who sleep well. Non-restorative sleep has been identified as a leading cause of poor daytime functioning. These cases must therefore be treated."

Depression and insomnia

"We also know that most psychiatric disorders and many of the neuro-degenerative diseases are closely associated with sleep problems," Nava Zisapel points out. "Depression and insomnia often occur together, but we have not yet established the connection between the cause and effect. We know that insomnia and sleep disorders are risk factors in development of depression, and we also know that most patients with depression have severe sleep problems."

Many disorders such as heart disease, Alzheimer’s disease and Parkinson’s disease are associated with diminished melatonin production, which may exacerbate the inherent sleep problem.

Melatonin and sleep quality

Research indicates that besides preparing the brain for sleep, melatonin also plays an important role in the quality of our sleep.

"Being able to fall asleep is one thing. Sleeping well is another. We all know that," says Nava, continuing: "Measuring good sleep is very difficult. In many cases, persons who complain of insomnia appear to sleep normally when they are examined in a sleep laboratory. Yet, they are convinced that they have not slept at all, and are tired and indisposed the following day. And they are undoubtedly right; it’s just not possible to measure it."

"The older one becomes, the more frequently one wakes during the night, and the less one sleeps deeply. Normal sleep patterns simply disintegrate and sleep quality, in particular, deteriorates," Nava Zisapel explains further.

She advises people to lead a healthy and relaxed life, and to get as much daylight as possible every day. "The more outdoor light, the better one’s inner clock functions, and the easier it is to sleep at night."

Sleep tidies up the brain

There is no doubt that humans are deeply dependent on sleep. The body does not function properly without sleep – and particularly not without good quality, restorative sleep. And research also shows that a lack of sleep weakens the memory and immune system. Without sleep, we would become ill and presumably die.

"Simply stated, sleep tidies up the brain. Research suggests that even during a short nap, the brain busily organizes and discards information," Nava Zisapel says, adding that insomnia creates an imbalance that has consequences for a number of physical and mental functions.

"When it’s time to sleep, it’s a matter of dimming one’s thoughts and brain. If one begins to plan and speculate, one begins producing the hormone cortisol, and then has serious problems sleeping. Lying awake to solve problems is not a solution. If anything, we solve our problems while we sleep. And we recharge our batteries at the same time, so we have more energy for our everyday activities when we wake up again."
The older one becomes, the more frequently one wakes during the night, and the less one sleeps deeply. Normal sleep patterns simply disintegrate and sleep quality deteriorates.

Nava Zisapel is a professor at Tel Aviv University. She has studied sleep and melatonin for over twenty-five years, and has developed the hypnotic Circadin® in her company Neurim Pharmaceuticals. The drug is based on melatonin and approved in Europe for persons over the age of 55 with primary insomnia. Lundbeck has acquired the marketing rights to Circadin® in a number of the largest markets in Europe.
**MY MISSION:**
To ensure that the operational sections of the company function smoothly so we can achieve our goals as efficiently and effectively as possible.

**MY VISION:**
We must be prepared for the future, and we prepare best by recruiting and retaining talented and flexible staff members.
Human Resources Director Marie-Claude Ballandras has been with Lundbeck France for four years. She has worked in pharmaceutical companies since 1987, has a degree in biology and a master’s in HR, and has always worked with HR.
In the future, it will be necessary for everyone to have competencies that enable them to undertake several functions.
From idea to drug

Distribution of drugs
Lundbeck drugs are registered in more than 90 countries. Lundbeck's own representatives are in charge of spreading the knowledge of Lundbeck products in 54 countries. As Lundbeck products are prescription drugs, doctors must decide when patients will benefit from them. Lundbeck spreads knowledge of its products through publications in scientific journals, participation in scientific conferences, and through meetings with doctors and specialists.

Production of drugs
A drug must be safe and efficacious. It must also be possible to produce it in large amounts and in a manner that enables patients to take the drug and assimilate it optimally in the body. Lundbeck manufactures its own drugs in Denmark, the United Kingdom and Italy where a total of 980 persons are employed in the manufacturing. Lundbeck also collaborates with a number of other companies on various phases of the production process, ranging from supply of raw materials and semi-finished products to pharmaceutical production and packing of the drugs.
700 million in the world

According to the World Health Organization (WHO), more than 700 million cases of disorders of the central nervous system are reported each year. These are serious and life-threatening illnesses that affect not only patients’ quality of life, but also that of their families and friends. For society in general, the major economic consequences caused by these conditions make it important to develop new and innovative drugs. During the past 50 years, novel drugs have revolutionized the possibilities of treatment. However, there is still a huge unmet need for new and innovative drugs.

From idea to drug candidate

More than 480 persons are employed at the Lundbeck research units in Denmark and the United States. The basis for a new and innovative drug is deep insight into the disorder itself, and into the unmet needs of patients. The process takes between three and five years, during which researchers work to identify where in the human organism a new drug must act and to test substances for any efficacy, side effects and toxicity. If a substance passes all of these tests, it becomes a drug candidate.

From candidate to approved drug

Lundbeck has development activities in some 40 countries around the world. More than 650 employees are involved in development activities which are necessary for a drug to be approved. First, a substance is tested in healthy persons for its tolerability, assimilation and distribution in the body. Following this, its efficacy and side-effect profiles are tested in a small group of patients. In the third and decisive phase, the drug is tested in a large group of patients. Developing a new drug is very demanding, and normally takes between eight and ten years.
The first years as a Danish trading company

Hans Lundbeck founded an agency in Copenhagen on 14 August 1915. The company dealt in everything from machinery, biscuits, confectionery, sweeteners, cinema equipment and cameras to photographic paper and aluminium foil, besides renting out vacuum cleaners.

During its first years, the business was operated as a trading company, but, from the mid-1920s, pharmaceuticals were added to its range of products. Eduard Goldschmidt was hired in 1924, bringing into the company a number of new agency contracts for drugs: suppositories for haemorrhoids, painkillers etc. Cologne and creams were also added to the portfolio.

1930-1945 Expansion in manufacturing and research

In the 1930s, Lundbeck began production and packaging of pharmaceuticals in Denmark. To ensure sufficient manufacturing capacity, the company moved to the Copenhagen suburb of Valby in 1939, where Lundbeck headquarters is situated today.

In 1937, Lundbeck introduced Epicutan® for treatment of wounds – its first original pharmaceutical – and Lucosil® for treatment of urinary tract infections in 1940. 45 staff members celebrated Lundbeck’s 25th jubilee the same year.

Hans Lundbeck died in 1943, and Poul Viggo Petersen was employed to build up Lundbeck’s pharmaceutical research. Thanks to his efforts, Lundbeck was able to create a niche for itself in psychopharmaceuticals.

1945-1960 The foundation of Lundbeck’s CNS expertise

During the years following World War II, Lundbeck intensified its research, laying the foundation stone for the drugs which would later make Lundbeck world famous. As the result of these efforts, Lundbeck was able to introduce Truxal® in 1957, one of the first drugs for treatment of schizophrenia.

In 1954, Mrs Grete Lundbeck, the widow of Lundbeck’s founder, established the Lundbeck Foundation for the purpose of ensuring and expanding Lundbeck’s business operations, as well as for providing financial support for primarily scientific objectives and fight against diseases.
1960-1975 Expanding Lundbeck goes international
Lundbeck’s success with Truxal® increased the need for additional production capacity. In 1961, Lundbeck purchased a redundant creamery in Lumsås and soon began production of active compounds.

A number of drugs for treatment of psychiatric disorders were launched during the following years, and Lundbeck established its own representation in a number of countries. Between 1960 and 1970, the number of employees doubled to 680, of whom approximately 100 were employed abroad. Lundbeck was becoming an international company.

1975-1990 Lundbeck defines CNS as its primary focus
After 60 years of growth and development based on a wide assortment of products, Lundbeck decided at the end of the 1970s to phase out its existing agencies and cosmetics departments. After that, the company would focus on development and commercialization of drugs.

At the close of the 1980s, Lundbeck further intensified its business strategy focus. In future, Lundbeck would dedicate its efforts to development, manufacturing and commercialization of drugs for the treatment of diseases and disorders of the central nervous system.

Cipramil® was launched in Denmark in 1989 and played a key role in Lundbeck’s expansion.

1990-2005 Expansion propelled by Cipramil® success
Lundbeck expanded rapidly in the 1990s, due to the success of Cipramil® for treatment of depression. Cipramil® was registered in more than 70 countries and grew to account for the major share of Lundbeck’s business operations.

To ensure its continued success, Lundbeck intensified its research activities and began in-licensing drugs from other pharmaceutical companies. This enabled Lundbeck to launch new drugs to take over when the patent on Cipramil® expired. Cipralex® was launched in 2002 and Ebixa® in 2003, and the two drugs were capable of compensating for Cipramil® when it was exposed to generic competition.

In 2003, Lundbeck acquired the American research company Synaptic, thereby establishing an American research unit as a bridgehead in the United States. Claus Bræstrup became President and CEO the same year.

2005-2020 One of the world’s leading CNS companies
In 2008, Lundbeck has more than 5,300 staff members who work in 54 countries. Lundbeck has a broad portfolio of drugs on the market for treatment of depression, anxiety, schizophrenia, Alzheimer’s disease and Parkinson’s disease. Lundbeck has 12 new and innovative drugs under development.

Lundbeck’s vision is to be one of the world’s leading companies in development of drugs for treatment of disorders and diseases of the central nervous system.

With more than 50 years of experience in development and commercialization of CNS drugs, Lundbeck has a solid foundation for ensuring that this vision can be fulfilled during the coming decade.
Lundbeck

at a glance

H. Lundbeck A/S is an international pharmaceutical company with more than 50 years of experience in research, development, production, marketing and sale of pharmaceuticals for the treatment of diseases of the central nervous system, CNS.

Our vision and mission

**Vision**
To become a world leader in psychiatry and neurology.

**Mission**
To improve the quality of life for people suffering from psychiatric and neurological disorders.

Our values

- Imaginative – Dare to be different
- Passionate – Never give up
- Responsible – Do the right thing

Lundbeck worldwide

The Group employs more than 5,300 employees in 54 countries.

**Production**

**Research**

**Sales**
Lundbeck Magazine 2008

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120 million persons page 22

Cipralex/Lexapro® (escitalopram) for the treatment of depression and anxiety was developed by Lundbeck and is the most frequently prescribed branded antidepressant in Europe and the USA.

Asilect® (rasagiline) for the treatment of Parkinson’s disease was developed in collaboration with Teva Pharmaceutical Industries Ltd. Lundbeck currently markets Asilect® in 24 countries.

Ebixa® (memantine) for the treatment of moderate to severe Alzheimer’s disease was developed in collaboration with Merz Pharmaceuticals GmbH. Memantine is the second most prescribed pharmaceutical for the treatment of Alzheimer’s disease in the world.

Cipralex/Lexapro® (escitalopram) for the treatment of depression and anxiety was developed by Lundbeck and is the most frequently prescribed branded antidepressant in Europe and the USA.

Revenue per product 2007*

* Exclusive of non-recurring items.

Revenue DKK 10,985 million
Research and development costs DKK 2,187 million
Profit from operations DKK 2,695 million
Net profit for the year DKK 1,770 million

Employees by business area in 2007

Lundbeck’s clinical development projects as of 4 March 2008
The specialist in psychiatry
and pioneer in neurology