GBC AG
Investment Research

# Research Report (Initial Coverage)

magforce®
THE NANOMEDICINE COMPANY

# "First patients are commercially treated with the MagForce-Technology; Approval in the US is associated with high sales and earnings potential"

## Target Price: €13.20

## Rating: BUY

**IMPORTANT NOTE:**
**Please take note of the disclaimer/risk warning, as well as the disclosure of potential conflicts of interest as required by section 34b of the Securities Trading Act (WpHG) on page 32**

**Date of Completion: 18/05/2015**

**Date of first Publication: 19/05/2015**

# MagForce AG[*5a,5b,11]

**Rating: BUY**
**Target Price: €13.20**

Current price: €5.50
18/05/2015 / ETR/11:00am
Currency: EUR

**Key information:**

ISIN: DE000A0HGQF5
WKN: A0HGQF
Ticker symbol: MF6
Number of shares[3]: 25.62
Marketcap[3]: 140.87
Enterprise Value[3]: 127.39
[3] in m EUR

**Transparency level:**
Entry Standard

**Market segment:**
Open Market

**Accounting standard:**
HGB

Financial year-end: 31/12

**Designated Sponsor:**
KochBank

**Analysts:**

Cosmin Filker
filker@gbc-ag.de

Felix Gode, CFA
gode@gbc-ag.de

* catalogue of potential conflicts of interests on page 33

**Company Profile**

Sector: Medical Technology

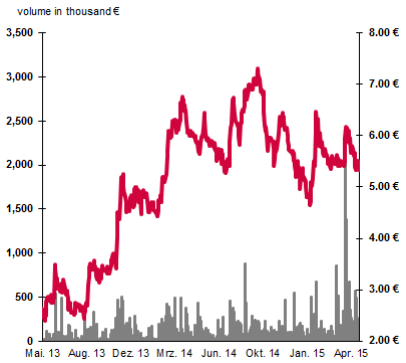
Specialty: Cancer Treatment

Employees: 22 Status: 30/06/2014

Founded: 1997

Registered Office: Berlin

Executive Board: Dr. Ben J. Lipps, Prof. Dr. Hoda Tawfik, Christian von Volkmann




By its own account, MagForce AG, located in Berlin, is a leading company in the field of nanomedicine with a focus on cancer treatment. The NanoTherm® therapy developed by the company is said to be suitable for the local treatment of almost all solid tumours. The treatment is based on heat that is created by the activation of injected super-paramagnetic nanoparticles. The components of this therapy, the medical devices NanoTherm®, NanoPlan®, the thermometric catheter TK01, NanoActivator® with the thermometric unit are certified across the EU for the treatment of brain tumours. The objective of the new cancer treatment is to establish itself as a further pillar of cancer therapy alongside conventional treatment methods such as surgery, radiation and chemotherapy. According to available data, the NanoTherm therapy displays a promising degree of efficacy as well as being well-tolerated.

| P&L in EUR m | 31/12/2014e | 31/12/2015e | 31/12/2016e | 31/12/2017e | 31/12/2018e |
|---|---|---|---|---|---|
| Sales | 7.08 | 1.88 | 5.20 | 19.23 | 53.27 |
| EBITDA | -1.06 | -9.25 | -8.26 | 3.84 | 24.47 |
| EBIT | -1.30 | -9.37 | -8.40 | 3.68 | 24.30 |
| Net profit | -1.00 | -9.37 | -8.40 | 3.68 | 24.30 |

| Per Share Figures in EUR | | | | | |
|---|---|---|---|---|---|
| Earnings per share* | -0.04 | -0.37 | -0.33 | 0.14 | 0.95 |
| *before minorities* | | | | | |
| **Key Figures** | | | | | |
| EV/Sales | 17.99 | 67.76 | 24.50 | 6.62 | 2.39 |
| EV/EBITDA | neg. | neg. | neg. | 33.17 | 5.21 |
| EV/EBIT | neg. | neg. | neg. | 34.62 | 5.24 |
| P/B before minorities | neg. | neg. | neg. | 38.28 | 5.80 |

| Financial dates |
|---|
| 21/05/2015: 19th MKK |
| 30/06/2015: Annual Report 2014 |
| August 2015: Annual Shareholder Meeting |
| September 2015: Half-Year Report 2015 |

| **last research published by GBC: |
|---|
| Date: publication/price target in €/Rating |
| |
| |
| |

** the research reports can be found on our website www.gbc-ag.de or can be requested at GBC AG, Halderstr. 27, D-86150 Augsburg

## EXECUTIVE SUMMARY

- The NanoTherm® therapy, developed by MagForce AG, has been approved in Europe for the treatment of brain tumours since 2010. With the anticipated clinical developments in prostate cancer in the USA, the company intends to acquire subsequent approval in the USA for treatment of this illness and therefore to cover indications featuring a significantly higher number of cases, and therefore entailing a higher sales and earnings potential. Furthermore, commercialisation for the treatment of brain tumours is to be established in Europe.

- In NanoTherm® therapy, a dispersion of super-paramagnetic nanoparticles with an iron-oxide core is inserted into the tumour. An alternating magnetic field is created via the Nano-Activator® developed by MagForce AG, which activates the nanoparticles and therefore creates temperatures of up to 80°C. Depending on the temperature level and treatment duration, this thermotherapy results in the complete destruction of the tumour cells or in sensitisation for concomitant treatment (radiation/chemotherapy) without damaging the surrounding tissue. Especially in the two indications of brain tumours and prostate cancer, the standard treatment methods currently applied (surgery, radiation, chemotherapy) are associated with significant side effects. In contrast, the NanoTherm® therapy displays a high safety profile and its high degree of efficacy was proven in prior approval studies. An extension to the treatment of further solid tumours is a likely scenario.

- Both indications, i.e. glioblastoma and prostate cancer, indicate a high market potential, whereby a significantly higher number of cases were reported for prostate cancer. This is based on an increasingly ageing population in the regions targeted by MagForce AG, i.e. Europe and the USA, with a disproportionately high risk of cancer-related diseases. Even with a low market coverage, the large population is reason enough for MagForce AG to expect significant sales and savings potential. Due to his extensive network in the Life Sciences sector, the Chairman of the Board, Dr Ben J. Lipps, would prove to be an important success factor.

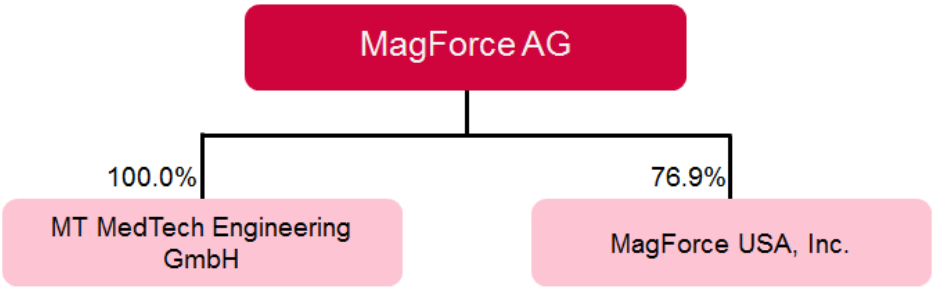
- Based on our corporate strategy, we established three significant revenue streams in cancer treatment: Brain tumours in Europe; glioblastoma in the USA and prostate cancer in the USA. Taking into consideration the fact that the NanoTherm® technology is classified as a medical device, a faster and more cost-effective approval procedure may be a possibility, especially in Europe. Several corporate measures (note: the extremely well-known technology investor Peter Thiel joined the American subsidiary MagForce USA, Inc. as an investor) formed the financial basis for the approval studies. Simultaneously, commercial treatment of the first patients commenced in Germany, meaning that first sales proceeds were generated in 2015.

- **Based on our forecasts, we expect an EBIT break-even in the 2017 financial year, which in turn allowed us to determine a fair value of €13.20 per share within the framework of the DCF model.**

# TABLE OF CONTENTS

# COMPANY OVERVIEW

## Company structure




*Source: MagForce AG; GBC AG*

With the founding of MagForce USA, Inc. in 2014, MagForce AG prepared its access to the North American market, whereby all MagForce Ventures GmbH shares were transferred to MagForce USA, Inc. as part of a share purchase agreement. The NanoThermTM therapy sales and development rights for the indications of “brain tumour" and “prostate carcinoma" for North America had previously been transferred to MagForce Ventures GmbH, equipping the new subsidiary MagForce USA with all the important rights for the USA, Mexican and Canadian markets. An initial financing round for the American subsidiary was also successfully completed in the 2014 financial year, during which strategic investors (including Peter Thiel) had written up for a total of $15.0 million and option rights were issued for an additional $15.0 million. This resulted in a reduced participation ratio to 76.9% for MagForce AG. This created not only the structural but also the financial basis for access to additional regions.

The wholly owned subsidiary MT MedTech Engineering GmbH manufactures MagForce AG’s magnetic field applicators (NanoActivator®) for treatment centres. The entire value contribution from the MagForce AG product range therefore remains within the Group.

## Corporate history

| Overview of MagForce AG's most important milestones | |
|---|---|
| 1997 | Founding of MFH Hyperthermiesysteme GmbH, Berlin as predecessor company for MagForce AG by Dr Andreas Jordan |
| 2000 | Founding of MFH Magnetic Fluid Hyperthermia Systeme GmbH, Berlin as predecessor company for MagForce AG by Dr Andreas Jordan |
| 2000 | Founding of MagForce Applications GmbH, Berlin by Dr Andreas Jordan |
| 2004 | Following the merger of the predecessor companies, MagForce Nanotechnologies AG was founded, with a focus on nanotechnological cancer treatment |
| 2007 | MagForce Nanotechnologies AG goes public |
| 2009 | MagForce Nanotechnologies AG reaches primary study endpoint in patients with recurrent glioblastoma. The study's 59 participants had reached a median survival period of 13.4 months following the diagnosis of the first recurring tumour. |
| 2010 | MagForce Nanotechnologies AG secures an equity facility amounting up to €20 million at call (SEDA); approximately €5 million drawn, contract expired. |
| 2010 | MagForce Nanotechnologies AG received European approval for nano cancer therapy. |
| 2011 | Establishment of the first treatment centre for NanoTherm therapy at Charité University Medical Department in Berlin announced |
| 2011 | NanoTherm therapy applied on the first patient with recurring glioblastoma |
| 2012 | Company restructure, new management and modified corporate strategy are introduced. Initiation of a capital increase that was successfully closed in spring 2013 with gross proceeds amounting to €33.5 million. |
| 2013 | The Federal Institute for Drugs and Medical Devices (BfArM) issues MagForce AG with approval to conduct a post-marketing study on recurrent glioblastoma in up to 280 patients. The study is to be conducted at up to 15 centres in Germany. |
| 2013 | Dr Ben J. Lipps is appointed Chairman of the Board of MagForce AG. |
| 2013 | Installation of the second NanoActivator® at the University Clinic in Münster |
| 2013 | Installation of the third NanoActivator® at the University Clinic in Kiel |
| 2014 | Announcement of the pre-IDE meeting with the American FDA |
| 2014 | The growth financing round at the newly founded subsidiary MagForce USA was completed successfully. Total proceeds of $15 million were achieved under the management of Mithril Capital Management. |
| 2014 | Successful closure of a capital increase of MagForce AG with gross proceeds amounting to €10.2 million. |
| 2015 | Installation of the fourth NanoActivator® at the University Clinic in Cologne |
| 2015 | Commercial NanoTherm® therapy initiated in the commercial treatment of patients suffering from brain tumours |
| 2015 | Installation of the fifth NanoActivator® at the University Clinic in Frankfurt |

*Source: MagForce AG; GBC AG*

## NanoTherm® Technology

NanoTherm® therapy, developed and patented by MagForce to combat solid tumours, is comprised of the medical products NanoTherm®, NanoPlan® thermometry catheter and the NanoActivator® with a thermometry unit:

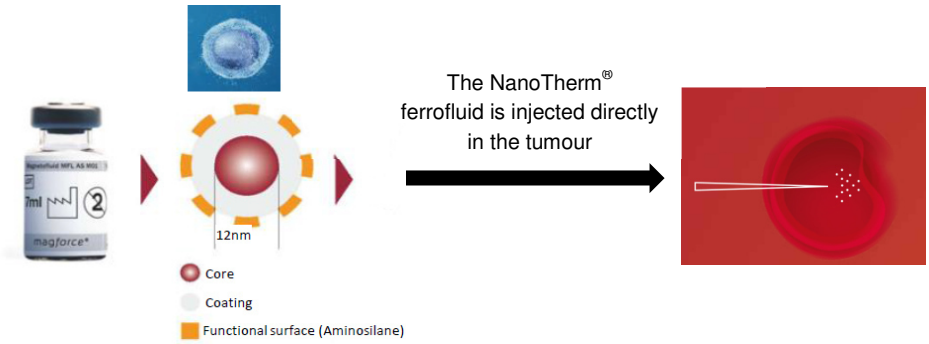
| NanoTherm®-therapy | | |
|---|---|---|
| **NanoTherm®** | **NanoActivator®** | **NanoPlan®** |
|  |  |  |

*Source: MagForce AG; GBC AG*

NanoTherm® therapy is an intratumoural thermotherapy that has been approved in Europe since May 2010 as the currently only nanomedicine-based therapy for the treatment of brain tumours. MagForce AG pursues the objective of establishing this novel therapy as a further treatment standard besides conventional treatment methods such as surgery, radiation and chemotherapy.

### *NanoTherm®*

NanoTherm® is a liquid containing super-paramagnetic, nano-sized iron oxide particles. These particles consist of an iron oxide core of approximately 14 nanometres and an aminosilane coating. NanoTherm® is inserted (instilled) into the solid tumour during a minimally invasive procedure. Due to the properties of the aminosilane coating, the iron oxide particles permanently remain in the instillation site, which enables multiple treatment cycles. The NanoTherm® particles are not or very slowly broken down by the body, as they agglomerate and therefore remain in the body, similar to an implant.

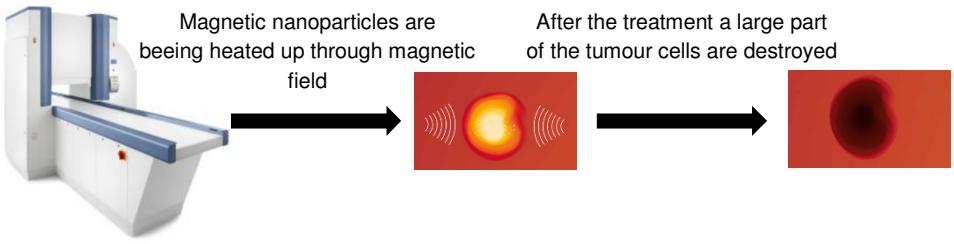



*Source: MagForce AG; GBC AG*

The iron oxide core is super-paramagnetic and, because of this property, responds well to a magnetic impulse.

### *NanoActivator®*

The magnetic field is created by the NanoActivator®, developed and manufactured by the MagForce subsidiary MT MedTech Engineering GmbH. This device, specially adapted to the application of NanoTherm therapy, creates an alternating magnetic field which activates the nanoparticles, whereby the orientation of the magnetic field alternates around 100,000 times per second, resulting in the activation of the nanoparticles and therefore heating the tissue of the injected tumour. The rapid change in the nanoparticles' orientation is responsible for the generation of heat.




*Source: MagForce AG; GBC AG*

In contrast to existing "hyperthermia procedures", which allow temperatures of up to 43°C to be reached, the application of MagForce technology can achieve significantly higher temperatures of up to 80°C within the tumour's tissue. This results in the destruction of cancer cells directly at the NanoTherm depots, in addition to the hyperthermic effect in the vicinity of the tumour.

### *NanoPlan®*

NanoPlan®, a software developed by MagForce AG, is then used by the treating doctor to plan the treatment temperature and the magnetic field intensity. Once NanoTherm® has been injected, a post-installation CT scan is performed to display the precise location and dissipation of the nanoparticle depots. In combination with imaging performed before nanoparticle installation, this serves as a data basis for the calculation and simulation of temperature dissipation in the tumour and in the surrounding healthy tissue in relation to the applied alternating magnetic field. This allows NanoPlan® to determine the optimal magnetic field intensity of the NanoActivator® needed to reach the therapeutic temperature, while taking all safety measures for the healthy tissue into consideration.

During the first treatment, the temperature reached in the tissue of the tumour is accurately measured with a temperature probe, which is inserted into a catheter that was previously inserted during the instillation of NanoTherm®. The temperatures measured are compared with the simulated and calculated temperatures and the magnetic field intensity is adjusted, if required.

## Footprint of the NanoTherm® technology

Several factors are required to establish the NanoTherm® therapy as a recognised form of treatment for solid tumours. As this form of treatment is a medical device, the approval process can be implemented much more quickly and is associated with lower costs than is the case with clinical pharmaceutical approval. Nevertheless, verification of the efficacy of the NanoTherm® therapy within the scope of clinical studies is still a component of the approval process for all indications, and direct communication with the leading opinion leaders is an important criterion for the establishment of this technology. Together with neurosurgical opinion leaders, the new company management, under the leadership

of Chairman Dr Ben J. Lipps (former Chairman of Fresenius Medical Care), initiated a post-marketing study to familiarise themselves with the treatment method and to gain further insight into their efficacy. The commercial success of the NanoTherm® technology further requires the involvement of the largest possible number of treatment centres, with an appropriate number of installed NanoActivator® devices. There are currently a total of five NanoActivator® devices installed at the University Clinics in Cologne, Kiel, Münster, Frankfurt and Berlin.

**Footprint NanoActivator®**


*Source: MagForce AG; GBC AG*

At this point, the new management at MagForce AG has set the course for a fast installation roll-out of NanoActivator® devices. The previous corporate management study planned the sale of the devices to the treatment centres, which, in our opinion, severely limited the number of installed NanoActivator® devices. This was specifically caused by the comparatively high advance investments of up to €1 million per device. To increase the number of installations, MagForce developed an alternative financing method within the framework of a pay-per-use model and therefore implemented a significant reduction in the investment volume for clinics. According to company information, a total of six locations in Germany will be tapped into by the end of 2015.

## Commercialisation strategy

The MagForce therapy has been approved for the treatment of brain tumours since 2010. However, commercial success has so far failed to appear. In our opinion, the delay in commercial treatment can, on the one hand, be attributed to the fact that until 2013, MagForce lacked the financial means to implement an appropriate roll-out. Furthermore, the study, decisive for approval, may have delivered promising results, but it did not lead to the introduction of the therapy due to the lack of involvement from opinion leaders in the medical sectors and lack of experience in its application. As a result, the new MagForce management initiated the above-mentioned **Post-Marketing Study** in the 2013 financial year to validate the results of the preceding study and to introduce users to the technology.

This study is conducted with the involvement of renowned key opinion leaders under the management of Prof Walter Stummer, Director of Neurosurgery and Speaker at the Neuro-oncological Competence Centre at the University Clinic of Münster. The random-

ised, controlled and open-label study examines the efficacy of NanoTherm® as a monotherapy and in combination with radiation in up to 269 glioblastoma patients experiencing a first recurrence. Further study centres apart from those with previously installed NanoActivator® devices will be involved, meaning that the study will be conducted at a total of up to 15 locations. As a result of not only the scope of the study but also due to the involvement of important key persons and opinion leaders, this study should generate a significantly higher level of attention.

This European study on the indication of **recurrent glioblastoma** is to be extended to the **USA** at a later stage as a preparatory measure for market launch in North America. MagForce AG, together with the US subsidiary MagForce USA, Inc., has therefore already initiated the necessary steps to conduct a study with the product in a meeting with the FDA. FDA approval financing to the amount of $15 million was already secured at an early stage through the successful first financing round at MagForce USA, Inc. The fact that the US authorities also classified the MagForce technology as a medical device, with a potentially appropriately reduced approval period, is a positive highlight.

Based on the significantly higher number of cases alone, the second indication, "**prostate cancer**", holds a much higher potential than "glioblastoma". The treatment of prostate cancer could therefore be the decisive driver for MagForce AG. According to corporate planning, approval in this segment is initially intended in the USA, with a request for submission of a study protocol already having been sent to the FDA (US Food and Drug Administration) and the company having received constructive feedback. The plan is to conduct a study to investigate the safety and efficacy of the product in the USA on patients with prostate cancer, with important opinion leaders in this segment being involved from the outset. Due to his excellent network, the Chairman of MagForce, Dr Ben J. Lipps, will likely play an important role in the approval process in the USA. Feasibility and safety studies conducted with 29 prostate cancer patients in Europe have already delivered promising data.

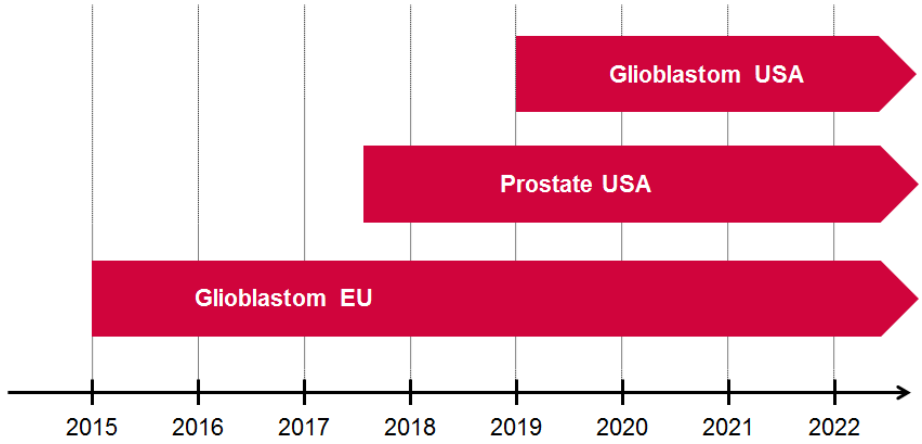
Consequently, the following strategy components are relevant for future corporate development:

- A post-marketing study in Europe for the indication "glioblastoma"
- Approval study for the indication "prostate cancer" in the USA
- Approval study of NanoTherm® for the treatment of glioblastoma in the USA

As NanoTherm® therapy has already been certified in Europe for the treatment of brain tumours, the first patients can already be commercially treated parallel to the post-marketing study and therefore generate the initial revenue. The first commercial treatments of glioblastoma patients were initiated at the University Clinics of Münster, Kiel and Cologne in February, March and May 2015.

In addition to the concrete corporate strategy, MagForce AG could for example seek approval for the therapeutic area of "prostate cancer" in Europe. In our opinion, this is a conceivable option, especially after the successful commercial launch in the USA. The fact that NanoTherm® therapy can be widely applied on solid tumours creates the opportunity for expansion to other indications. In principle however, the focus is on the previously described three concrete strategy components:

**Possible marketing schedule based on corporate strategy**




*Source: MagForce AG; Estimates GBC AG*

## The comparative advantages of NanoTherm®

### *Glioblastoma*

In 2010, MagForce AG successfully completed a clinical study for "glioblastoma" and therefore attained European certification for NanoTherm® therapy. A total of 66 patients (with 59 patients being recurrent = suffering from the recurrence of glioblastoma) were included in a single-arm study at two treatment centres.

With a WHO rating of IV, glioblastoma is classified as extremely malignant and is associated with a very short survival period. Although standard therapy includes the application of all classical treatment methods, from surgery to radiation and chemotherapy, the probability of the tumour's recurrence is very high. According to statistics, following an average survival rate of 32 - 36 weeks, glioblastoma recurrence is unavoidable (Recurring Glioblastoma Multiforme – article on medscape.com). Overall, the average survival rate is between 12 and 18 months, with a very reduced probability of survival of less than 10% after five years.

The diagnosis of a malignant brain tumour is typically followed by the surgical removal of the affected tissue with subsequent radiation. In the user study conducted between 2005 and 2009 for the approval of NanoTherm® therapy in Europe, this was combined with standard treatment and statistically analysed. This not only included the verification of the safety profile but also led to improvements regarding the average survival rate after the determination of recurrence or following the primary diagnosis.

| | Radiation with NanoTherm® | Radiation alone (from literature) |
|---|---|---|
| Average survival after recurring glioblastoma | 13.4 months | 6.2 months |
| Average survival following primary diagnosis | 23.2 months | 14.6 months |

*Source: MagForce AG; GBC AG*

Even though the results from the earlier clinical study on the thermotherapy developed by MagForce AG are promising, across-the-board commercialisation has so far not been established. In our opinion, this is due to the reduced study scope of only 66 patients. On the other hand, MagForce AG, as described above, failed to involve the opinion leaders from the neuro-oncological field in the development.

However, in order to promote the commercialisation of NanoTherm® therapy in Europe, MagForce AG initiated a second, open-label, randomised and controlled post-marketing study. At approximately ten centres in Germany, the efficacy and superiority of a combined therapy (incl. NanoTherm®) is to be verified in up to 280 patients. In accordance with corporate strategy, opinion leaders in oncology and neurosurgery were now involved in this study at an early stage in order for to be able to profit from their expertise.

### *Prostate cancer*

For "prostate cancer", the NanoTherm® therapy can not only be applied in the treatment of intermediary prostate cancer but also as a combination therapy in high-risk patients with recurring prostate cancer. The advantages of minimally invasive as well as low-toxicity, procedures during the application of the MagForce therapy also apply here.

Traditional treatment of prostate cancer encompasses standard methods such as surgery, various forms of radiation and optional anti-hormone therapies. In the early stage, the close monitoring of patients with a low PSA value (prostate-specific antigen = value as benchmark for the activity of prostrate tissue) has proven its worth and has established itself, especially in the USA,

whereby the standard procedure fundamentally evinces a high healing rate. Parties in advanced tumour stages also do not display a renewed increase in PSA values in up to three quarters of cases after ten years following a prostatectomy (surgical removal of the prostate), for example. However, as a prostatectomy is a major surgical intervention, it is frequently associated with numerous side effects. Apart from side effects directly related to the surgery, long-term effects may also include incontinence and impotence. With regard to radiation, the side effects (inflammation of the treated regions) are directly related to the treatment.

NanoTherm® therapy is to be primarily applied on patients in a comparatively early stage of prostate cancer, with the aim of keeping the carcinoma in a non-aggressive stage. This permits the extension of the treatment-free period and the prevention of associated side effects.

## The company's executive bodies

### *Management Board*

**Dr Ben J. Lipps, CEO**

Dr Ben J. Lipps was appointed to the Board of MagForce AG in September 2013. Between May 1999 and December 2012 he was Chairman of the Board for Fresenius Medical Care. During his time at Fresenius Medical Care, the corporation tripled its turnover from $3.8 billion (USD) to $12.8 billion, while annual net profit increased six-fold to $1.1 billion. Apart from his chairmanship, Dr Lipps was also the Chairman of the Board for Fresenius Medical Care North America until February 2004. From October 1989 to February 2004, he was President, Chief Executive Officer, Chief Operating Officer and Director at Fresenius USA and served in various capacities with the company's predecessor between 1985 and 1989. Before Dr Lipps joined the Fresenius Group in 1985, he held several research management positions in various companies, including DOW Chemical.

His academic career includes postgraduate and doctoral degrees in chemical engineering at MIT (Massachusetts Institute of Technology).

**Prof Hoda Tawfik**

Prof Hoda Tawfik joined MagForce AG as Vice President R&D/Medical Affairs in May 2011 and was appointed to the Board in October 2012. She has over 20 years of experience in clinical development and medical affairs in both CRO (contract research organisations) and the pharma/biotech industry. Before joining MagForce, she worked at Medigene AG where she was Head of Global Clinical Operations and Medical Affairs for nine years. Hoda Tawfik completed her pharmacy studies at the University of Cairo, and subsequently obtained her PhD in pharmacology and toxicology at the University of Düsseldorf. She then worked in pharmacological research at the universities of Cairo, Heidelberg, and Munich, while simultaneously holding the post of Professor of Pharmacology at the University of Cairo.

**Christian von Volkmann**

Christian von Volkmann has been supporting MagForce since May 2012 and was appointed to the Board in October 2012. He has more than 14 years of international experience in corporate finance/capital market transactions, group structuring, and mergers and acquisitions (M&A). From 2004 to 2010, he held various positions at Jerini AG, most recently as Vice President Finance until its takeover by Shire in July 2008. Subsequently as Chief Financial Officer, he then assumed responsibility for the squeeze-out and integration of the Jerini Group, as well as for the spin-off and sale of the business units. From 2010 to 2012, Christian von Volkmann consulted companies across Europe in legal disclosure and

stock exchange listing requirements as well as in operational management as the owner of CMaP Financial Consulting.

He studied business administration in Würzburg and is also a Certified Public Accountant licensed in the USA.

### *Supervisory Board*

**Norbert Neef, LL.M. (Chairman of the Supervisory Board)**

Norbert Neef is founder and partner at Neef Legal Rechtsanwälte, a law firm specialising in legal services for private equity, venture capital, and mergers & acquisitions. The firm represents leading private equity funds and their investments, particularly in the areas of media and nanotechnology. Mr Neef began his career at a leading international law firm and subsequently became an in-house counsel and specialist for structured financing at various companies. Mr Neef serves on the advisory boards of several private companies and was most recently Chairman of the Supervisory Board of Mood and Motion AG. He also taught corporate law at the Cologne University of Applied Sciences for ten years and has recently continued his teaching activities at the Fresenius University of Applied Sciences.

**Stephan Jakober**

Mr Stephan Jakober is a consultant for CIB Beratung AG (Zurich) in the areas of private equity, corporate finance, and mergers & acquisitions. Previously, Stephan Jakober was responsible for investments in medium-sized enterprises for a number of European private equity funds in his role as an investment director. Mr Jakober studied business administration at the University of St Gallen (HSG).

**Dr Wiebke Rösler**

Dr Wiebke Rösler worked as a specialist at Hanover Medical School, Centre for Internal Medicine, Department of Haematology, Oncology, Haemostaseology and Stem Cell Transplantation. She has many years of experience as an internal specialist in haematology and oncology. As sub-investigator, she participated in clinical studies concerning Hodgkin lymphoma, non-Hodgkin lymphoma as well as acute and chronic leukaemia.

Dr Wiebke Rösler studied medicine at Hanover Medical School, earning her PhD in native-radiological diagnostics.

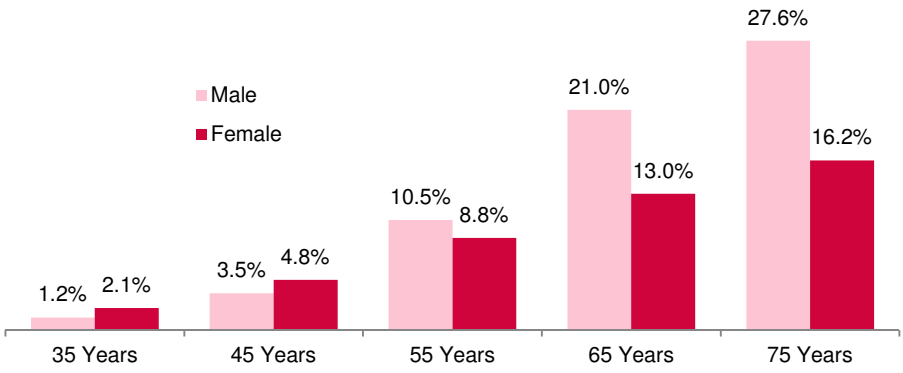
## MARKET AND MARKET ENVIRONMENT

Although the technology of MagForce AG may initially address indications such as "glioblastoma" and "prostate cancer", the cross-indication treatment of solid tumours is also possible. Where technologically possible, the presentation of market potential is to encompass a regionally specific analysis of the general number of cancer cases. An indication-specific analysis with a focus on the current indications of "glioblastoma" and "prostate cancer" will also be compiled.

### The global development of cancer cases

A decisive influencing factor for the number of cases (number of afflicted persons) of cancer is the change in the population's age structure. A fundamental increase in life expectancy goes hand-in-hand with a statistically higher probability of contracting cancer. The risk of contracting cancer is also comparatively higher among the older population than in younger population groups. According to the Robert Koch Institute, the average age of onset in Germany for both men and women is around 69 years. For both genders, the risk of contracting cancer within the next ten years is highest among the population group aged 75 or older, with rates being 27.6% in men and 16.2% in women.

**The risk of contracting cancer in Germany for the next ten years**

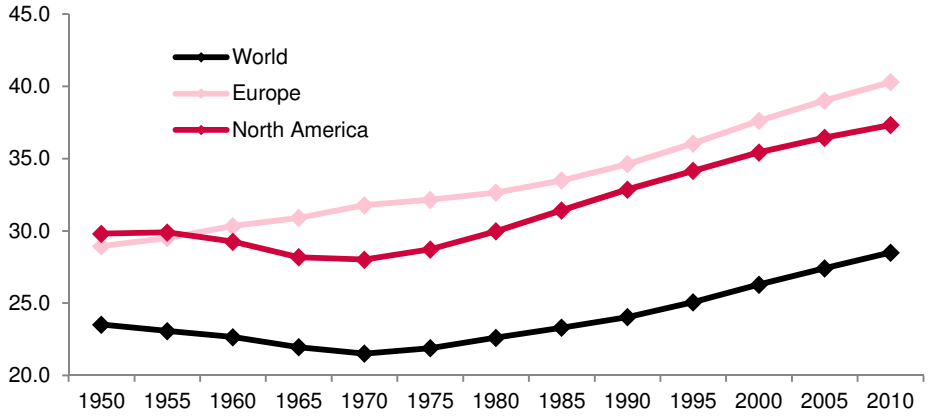



*Quelle: Robert Koch Institute; Cancer Registry Data; GBC AG*

The same correlation can also be established on a global level, whereby age plays a decisive role in cancer cases. While no more than 221 out of 100,000 people worldwide contract cancer among those aged under 50, this proportion increases to 896 out of 100,000 in those over 65. At 1,544 out of 100,000, the most severely affected are those over 75 (source: GLOBOCAN).

Consequently, the increasing age of the population will result in an over-proportional increase in cancer cases. According to data provided by the United Nations, a general increase in the average age (median) of the world population has been observed in this respect since 1950, whereby those industrial regions specifically targeted by MagForce AG (Europe and North America) display an over-proportional ageing of society. Between 1950 and 2010, the median age increased by 39.2% in Europe and by 25.2% in North America. The average European population is therefore 40.3 years (as at 2010) in comparison to 1950, when the average age was 28.9 years. According to United Nations forecasts, this development will continue over the coming decades.

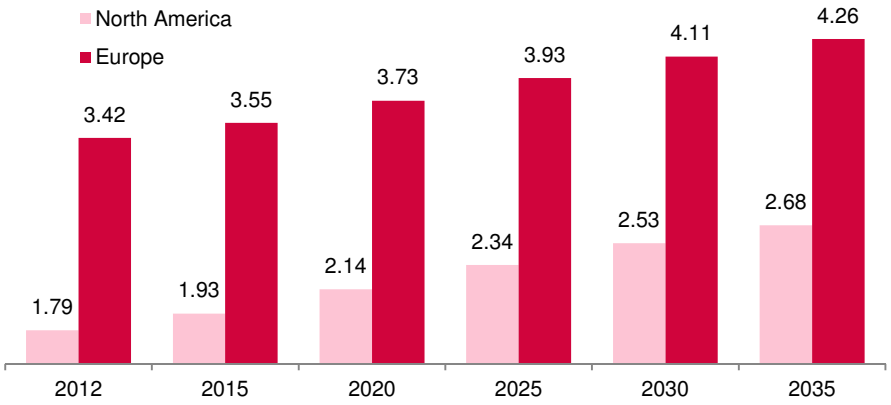
**Average age by selected regions (in years)**




*Soruce: United Nations - World Population Prospectus; GBC AG*

Demographic effects play an important role in the forecast development of cancer cases. According to the GLOBOCAN database (project of the International Association of Cancer Registries - IARC), the rate of cancer cases will increase by 49.9% (North America) and by 24.6% (Europe) by the year 2035. In both regions significant for MagForce AG, a total of approximately seven million people will have contracted cancer by the year 2035.

**Forecast number of cancer diseases (in millions)**




*Source: GLOBCAN; GBC AG*

MagForce AG is therefore active in a market environment with an upward trend, which is likely to result in an overall upward development of the oncology market. In 2013, around $91 billion was spent on cancer treatments throughout the world, more than for the so-called "major" indications such as diabetes, hypertension, respiratory tract diseases and mental disorders (source: IMS Health).

## The market potential of glioblastoma

Basically, the market for oncological treatments can be divided into various methods, with surgical tumour removal, radiation and chemotherapy being the most important treatment methods. Within the scope of local therapy, the tumour may, for example, be surgically removed or destroyed by radiation. Just like hormone or immunotherapy, chemotherapy is a systemic therapy intended to destroy or combat cancer throughout the body. Cancer patients are frequently treated with several combined forms of therapy.

All three important forms of treatment (surgery, radiation, chemotherapy) can be applied on malignant brain tumours (glioblastoma), either individually or combined. Despite in-

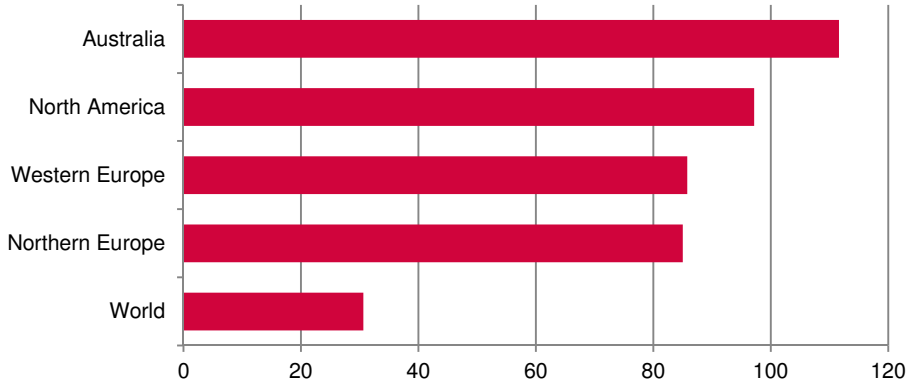
tense treatments, patients with malignant brain tumours still exhibit a very low average survival period of between 7.5 months and 17.1 months, depending on the stage and age of the patient. The five-year survival rate, equally dependent on the patient's age and disease stage, is between 0.0% and 14.0%, which denotes a high medical need for the treatment for this disease.

On a worldwide basis, brain tumours are a rare tumour disease. According to data provided by GLOBOCAN, the global number of cancer cases affecting the brain and nervous system was at 256.2 thousand, which constitutes approximately 1.8% of all cases of cancer. If we only consulted rare, malignant glioblastoma, this proportion would be significantly below 1.0%. This rate also applies for Germany, where the average frequency of contracting a malignant primary brain tumour stands at 9.7 (men) or 7.3 (women) per 100,000 people (source: Robert Koch Institute). A total of approximately 6,700 people are diagnosed with brain tumours in Germany every year.

## The market potential of prostate cancer

In comparison to glioblastoma, the second indication addressed by MagForce, i.e. "prostate cancer" denotes a significantly higher market potential due to a considerably higher number of cases. Prostate cancer is a disease which occurs particularly frequently in industrial countries, with an emphasis on Australia, North America and Western Europe. In these regions, the probability of contracting prostate cancer is between 85.0 and 111.6/100,000 inhabitants, and therefore significantly higher than in the remaining parts of the world (30.6/100,000 inhabitants):

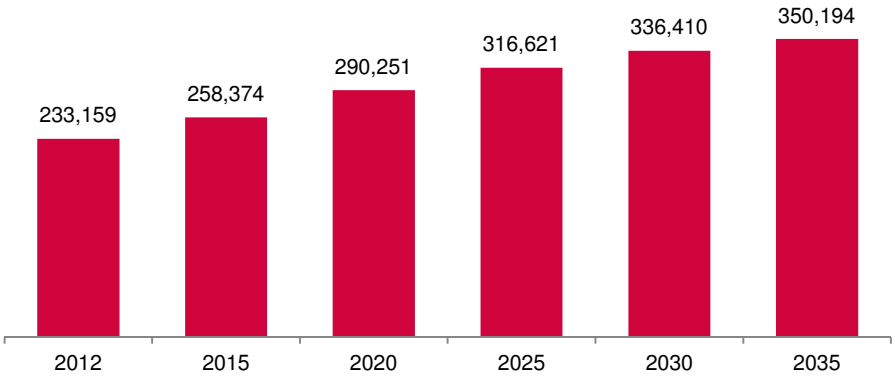
**Probability of contracting prostate cancer (per 100,000 inhabitants)**




*Source: GLOBCAN; GBC AG*

In the USA, a market targeted by MagForce AG, around 260,000 men contract prostate cancer every year, whereby we can assume a significant increase in the annual number of cases over the next few years. By the year 2035, this number is expected to increase by around 350,000 new cases every year, whereby age distribution, with an anticipated over-proportional population increase among the older population group, will also play an important role in the number of prostate cancer cases. The average age at the time of diagnosis is at 66 years, whereby the predominant proportion of prostate cancer cases is diagnosed between 65 and 74 years.

**Forecast of the number of prostate cancer cases in the USA**




*Source: GLOBCAN; GBC AG*

The overall very high number of cases, in connection with a comparatively slow disease progression, is decisive when it comes to expenditure in the treatment of prostate cancer. The relative five-year survival rate for prostate cancer of 93.0% is relatively high when compared to other forms of cancer, which results in a long treatment period with appropriately high expenditure. According to IM Health statistics, the market for prostate cancer treatments held a total global volume of $3.9 billion in 2012. This market volume is anticipated to multiply to a total of $12.1 by the year 2022. Apart from an increase in cases, new treatment technologies are also said to be responsible for the CAGR (2012-2022) amounting to 12.0%.

The indications currently targeted by MagForce AG illustrate the high market potential within the important regions of Europe and the USA in exemplary fashion. In principle, MagForce technology could also be applied in the treatment of other solid tumours, making broad coverage of market potential conceivable. In this case, MagForce AG would include the treatment of glioblastoma and prostate cancer in an initial step as "proof of concepts".

The positioning of MagForce AG as a provider of new tumour treatment technology in the most important markets of Europe and the USA should therefore be classified as comprehensible and promising.

# BUSINESS DEVELOPMENT & ESTIMATES

## Key financial figures

| P&L (in €m) | FY 2012 | FY 2013 | FY 2014e | FY 2015e | FY 2016e | FY 2017e | FY 2018e |
|---|---|---|---|---|---|---|---|
| Sales | 0.00 | 0.00 | 0.00 | 1.88 | 5.20 | 19.23 | 53.27 |
| Other operating income | 0.95 | 5.44 | 7.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Overall performance** | **0.95** | **5.44** | **7.08** | **2.35** | **5.20** | **19.23** | **53.27** |
| Material expenses | -0.19 | -0.57 | -0.04 | -0.38 | -1.04 | -5.69 | -10.80 |
| **Gross profit** | **0.76** | **4.87** | **7.04** | **1.50** | **4.16** | **13.54** | **42.47** |
| Personnel expenses | -2.15 | -2.10 | -2.40 | -2.45 | -2.60 | -3.05 | -5.62 |
| Depreciations | -0.28 | -0.13 | -0.24 | -0.13 | -0.14 | -0.16 | -0.17 |
| Other operating expenses | -3.22 | -4.22 | -5.70 | -8.30 | -9.83 | -5.88 | -10.95 |
| **EBIT** | **-4.89** | **-1.58** | **-1.30** | **-9.37** | **-8.40** | **3.68** | **24.30** |
| Other interest and similar income | 0.19 | 0.26 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 |
| Depreciation of financial assets | 0.00 | -0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Interest and similar expenses | -1.01 | -0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **EBT** | **-5.72** | **-1.63** | **-1.00** | **-9.37** | **-8.40** | **3.68** | **24.30** |
| Taxes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other taxes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Net profit or loss for the period** | **-5.72** | **-1.63** | **-1.00** | **-9.37** | **-8.40** | **3.68** | **24.30** |

*Source: MagForce AG; GBC AG*

## Business development as at 31/12/2013

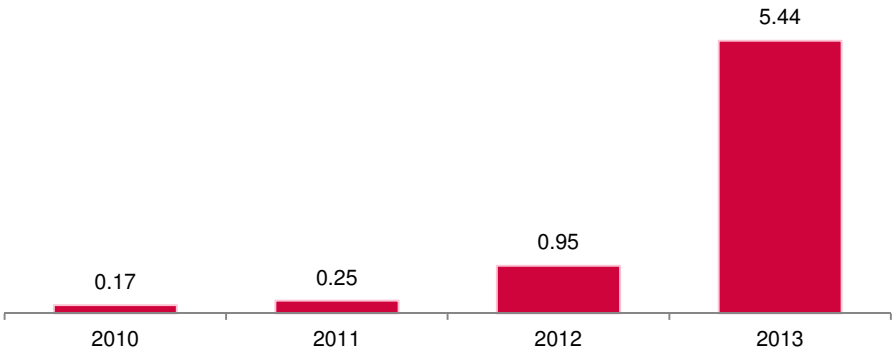
| in €m | FY 2010 | FY 2011 | FY 2012 | FY 2013 |
|---|---|---|---|---|
| Total output | 0.17 | 0.25 | 0.96 | 5.44 |
| EBITDA | -5.90 | -6.50 | -4.61 | -1.45 |
| EBIT | -6.30 | -6.77 | -4.89 | -1.58 |
| Net profit or loss | -7.45 | -8.59 | -5.72 | -1.63 |

*Source: MagForce AG; GBC AG*

The sales and earnings performance of MagForce AG paints a typical picture for companies in the pre-commercialisation phase. This is usually characterised by low or even lack of revenue, while costs for the launch are nevertheless incurred, allowing negative earnings levels to continue to prevail. Since the focus of MagForce AG primarily remained on installing NanoActivator® devices at hospitals and their integration in clinical trials over recent financial years, commercialisation revenue has not yet been generated. Furthermore, research and development activities were continued, with the aim of an extension to other indications as well as exploiting further opportunities in the USA.

In the past financial years, the earnings situation in terms of MagForce AG's overall performance was marked by special effects. One example is the 2013 financial year, in which the company achieved other operating income in the amount of €5.44 million. These are mainly related to the transfer of distribution and development rights for NanoTherm® therapy in brain tumours to the subsidiary MagForce Ventures GmbH, which was founded in 2013. The transfer, which had not triggered a liquidity inflow, should be seen as a preparatory measure for entry onto the US market. In the period from 2011 to 2012, the income was comprised of the reversal of provisions, write-offs of liabilities or investment allowances:

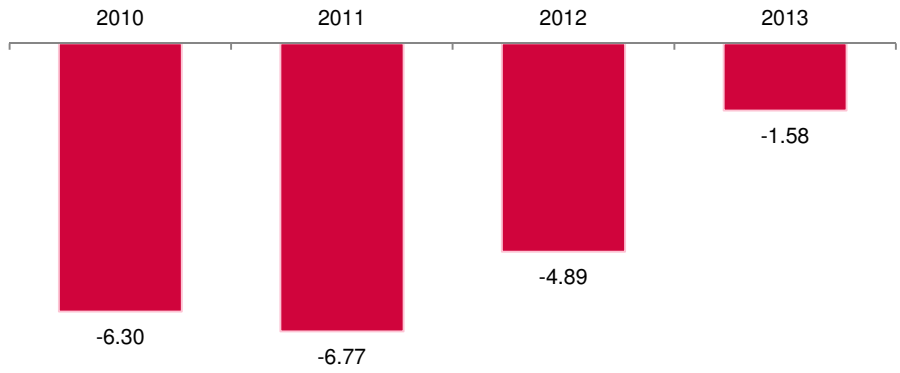
**Development of overall performance (in € million)**




*Source: MagForce AG; GBC AG*

However, the low revenue base is primarily countered by costs associated with clinical trials and corporate financing (corporate actions). In the 2013 financial year, operating costs totalled €7.02 million (previous year: €5.85 million). The year-on-year increase in expenses was mainly due to the corporate action carried out in early 2013, resulting in an increase in total legal and consulting fees and travel expenses. Due to the increased overall performance, however, the EBIT improved to €-1.58 million (previous year: €-4.89 million), but has still remained negative, as expected.

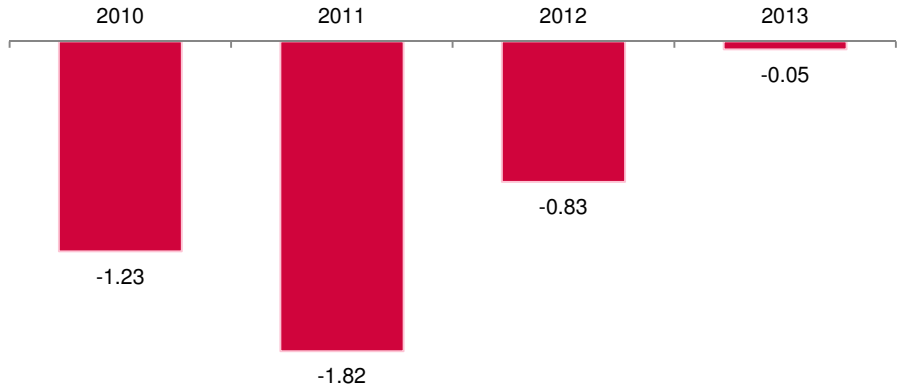
**EBIT performance (in € million)**




*Source: MagForce AG; GBC AG*

The capital increase performed in the first quarter of 2013 with gross issue proceeds amounting to €33.49 million represents an important milestone in the corporate financing of MagForce AG. In addition to the issuance of 9.75 million new shares for cash, shareholders' loans totalling €15.9 million had also been converted into equity (debt-to-equity swap). As a consequence of the significant decline in debt capital, the financial result improved significantly in 2013, totalling €-0.05 million (previous year: €-0.83 million). This effect can be classified as sustainable and future financial results should therefore also be situated at similarly low levels.

**Financial result (in € million)**




*Source: MagForce AG; GBC AG*

As expected, the result for the period is negative, at €-1.63 million (previous year: €-5.72 million). The significant earnings improvement compared with the previous years is due to the special gains realised in connection with the transfer of distribution and development rights to the subsidiary MagForce Ventures GmbH on the one hand and a result of the significant decline in the financial result on the other hand.

In companies with a focus on R&D and which are rapidly moving towards commercialisation, funding is of crucial importance. Naturally, companies like MagForce AG still show a negative operating cash flow in the pre-commercialisation phase, with the result that external corporate financing has a high priority. At the same time, this ensures the funding of preparatory measures for the commercialisation of the NanoTherm® technology.

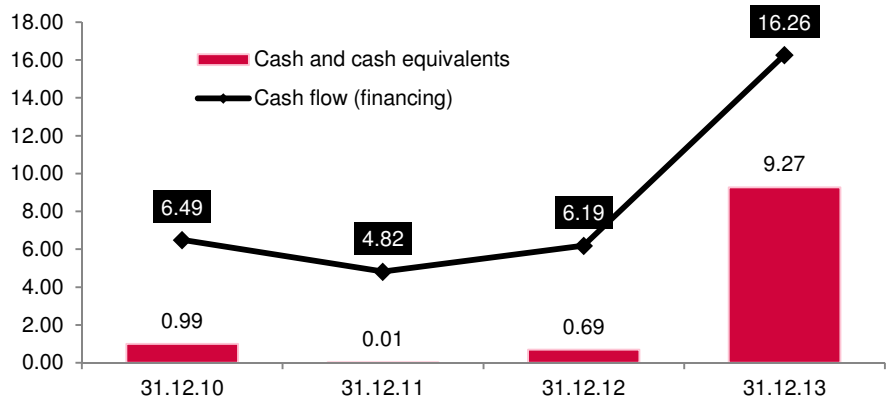
## Balance Sheet and Financial Situation as at 31/12/13

| in €m | 31.12.2010 | 31.12.2011 | 31.12.2012 | 31.12.2013 |
|---|---|---|---|---|
| Equity | 0.00 | 0.00 | 0.00 | 15.24 |
| *of which proportion of net loss* | *-23.24* | *-31.83* | *-37.54* | *-39.17* |
| Equity before adjustment items | -11.94 | -16.37 | -16.63 | 15.24 |
| Debt capital | 15.62 | 19.25 | 19.59 | 2.49 |
| Cash and cash equivalents | 0.99 | 0.01 | 0.69 | 9.27 |
| | | | | |
| Cash flow (operative) | -5.35 | -4.54 | -5.47 | -6.79 |
| Cash flow (investment) | -0.88 | -1.26 | -0.04 | -0.89 |
| Cash flow (financing) | 6.49 | 4.82 | 6.19 | 16.26 |

*Source: MagForce AG; GBC AG*

Especially in the 2013 financial year, MagForce AG achieved a significant increase in cash and cash equivalents amounting to €9.27 million (31.12.12: €0.69 million). This is exclusively due to the capital increase conducted in March 2013, resulting in a total additional liquidity of €17.56 million:

**Development of cash and cash equivalents and financing cash flow (in € million)**

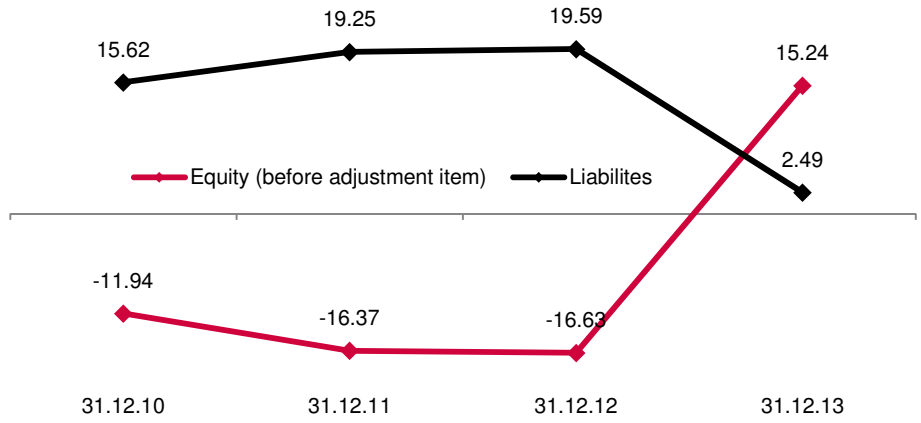



*Source: MagForce AG; GBC AG*

At MagForce AG, corporate actions have so far been an important factor in ensuring liquidity. Between the years 2010 and 2013, in accordance with the financing cash flow, a total inflow of cash amounting to €33.75 million was achieved with capital increases. This was mainly achieved with €17.55 million from corporate action in the 2013 financial year. In 2012, a total of €5.45 million was obtained through several corporate measures and, in the 2010 and 2011 financial years, a total of €5.14 million was obtained as part of the formerly existing equity financing commitment and €4.07 million as part of several private placements.

On 31.12.13, MagForce AG was able to record a positive equity in the amount of €15.24 million for the first time (previous year: €0.00 million). Since the capital was in a negative range during the previous years (before adjustment items) due to the aggregated net loss, the capital increase, which had been carried out in March 2013, gave way to an increase in equity amounting to €33.49 million (including cash inflow of €17.55 million). As part of this capital increase, shareholder loans to the amount of €15.9 million were, among others, converted into equity (debt-to-equity swap), resulting in a significant decrease in debt capital and thus leading to an overall significant improvement in the balance sheet structure. On 31.12.13, the equity ratio was 85.9%.

**Equity and debt (in € million)**




*Source: MagForce AG; GBC AG*

## Business Development as at 30/06/2014

| in €m | first HY 2012 | first HY 2013 | first HY 2014 |
|---|---|---|---|
| Total output | 0.10 | 0.04 | 7.08 |
| EBITDA | -3.02 | -1.93 | 3.78 |
| EBIT | -3.15 | -2.00 | 3.71 |
| Net profit or loss for the period | -3.57 | -2.28 | 3.84 |

*Source: MagForce AG; GBC AG*

The first six months of the 2014 financial year show a similar picture when compared to the 2013 financial year. The significant expansion of the overall performance amounting to €7.08 million (first half of 2013: €0.04 million) is due to the transfer of distribution and development rights to MagForce Ventures GmbH, as had already been the case in the 2013 financial year. Since the rights transferred in 2014 concern the much larger indication of "prostate cancer", income from the disclosure of hidden reserves in the amount of €6.90 million is higher than the corresponding non-recurring income of the entire 2013 financial year.

Consequently, MagForce AG was first able to achieve a positive net profit for the period totalling €3.84 million (previous year: €-2.28 million). However, this is to be understood as a consequence of the purely result-effective extraordinary income and should therefore initially not be classified as sustainable.

Furthermore, in the first six months of 2014, the focus of the company was on the post-marketing study and clinical application of NanoTherm® as monotherapy as well as in combination with radiation therapy for glioblastoma patients in their first recurrence (re-appearance of the tumour). Moreover, market entry into the US market has been further intensified. In this regard, the subsidiary MagForce USA Inc. was founded to develop the North American market, which has conferred all shares of MagForce Ventures GmbH as part of a transfer of shares in exchange for 5.00 million shares. After the balance sheet date in July 2014, approximately $15 million was raised as part of a first round of financing for MagForce USA Inc. and warrants to subscribe for shares were issued against payment of a further $15.0 million. This serves as both a structural and financial basis for entry into the US at an early stage.

MagForce AG has therefore made significant progress towards its commercialisation and has reached important milestones according to plan. Free cash flow was expected to

remain unchanged in the negative range at €-4.21 million. If the capital increase carried out in 2014 in the subsidiary MagForce USA, Inc. and the capital increase of €10.2 million successfully completed in November 2014 are included in the calculation, this results in a cash reach of about 7.0 periods and thus until the end of the 2017 financial year.

## SWOT-Analysis

| Strengths | Weaknesses |
|---|---|
| • The NanoTherm® technology was reported to have a high safety and efficacy profile in the previous studies.<br>• MagForce AG has experienced management. Due to the extensive network of Dr Ben J. Lipps, approval in the US should be achieved rapidly.<br>• The technology of the company enjoys extensive patent protection.<br>• The capital structure has improved significantly in recent years. The current liquidity level shows a high coverage until 2017 and should be sufficient to cover the study costs.<br>• The business model of MagForce AG is scalable and it should enable high, medium-term profitability over the course of sales growth. | • Commercialisation of NanoTherm® technology only started in 2015. Mistakes made during the previous approval studies will be remedied as part of a post-marketing study.<br>• Due to lack of operative cash inflows, the company still has a high cash burn.<br>• A substantial proportion of the revenue should be achieved in the American subsidiary MagForce USA, Inc., of which MagForce AG holds 76.9%.<br>• Dependence on key individuals is currently relatively high. |
| **Opportunities** | **Risks** |
| • Compared to the current standard therapies, the treatment approach of MagForce AG displays major benefits and should therefore attract a great deal of attention.<br>• Because of the demographic structure of the regions targeted, a disproportionate increase in cases in the indications of glioblastoma and prostate cancer is to be expected.<br>• Due to the broad range of possible applications, other indications may also be addressed in the future.<br>• Due to the involvement of opinion leaders in the current and upcoming approval studies, more rapid commercialisation should be possible. | • Delays in the approval or negative study results would have a significant impact on the sales and earnings situation of MagForce AG.<br>• There is a risk that the post-marketing study could not contribute to across-the-board commercialisation.<br>• The development of newer methods with a better efficacy profile could have a significant adverse effect on the expected development of the business.<br>• If the health insurance companies refuse to assume the costs, this will have a negative effect on the demand for NanoTherm® therapy, although a large proportion of revenue is based on self-paying patients. |

## Forecasts and Model Assumptions

| in €m | 2014e | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e | 2021e |
|---|---|---|---|---|---|---|---|---|
| Total output | 7.08 | 1.88 | 5.20 | 19.23 | 53.27 | 84.42 | 117.07 | 140.74 |
| Gross profit | 7.04 | 1.50 | 4.16 | 13.54 | 42.47 | 67.39 | 94.04 | 113.01 |
| EBITDA | -1.06 | -9.25 | -8.26 | 3.84 | 24.47 | 40.71 | 57.04 | 68.54 |
| EBIT | -1.30 | -9.37 | -8.40 | 3.68 | 24.30 | 40.54 | 56.87 | 68.37 |
| Net income before minorities | -1.00 | -9.37 | -8.40 | 3.68 | 24.30 | 28.38 | 39.81 | 47.86 |

*Source: GBC AG;*

### *Commercialisation schedule*

As a basis for our sales and earnings forecasts and based on management discussions, we have elaborated a commercialisation schedule for the indications of "glioblastoma" and "prostate cancer" in Europe and USA. Basically, an expansion to other indications is conceivable, but since there are currently no concrete plans at hand, we do not take this upside potential into account.

According to the current corporate strategy, future sales development will be composed of three sources of revenue:

- Treatment of glioblastoma in Europe
- Treatment of prostate cancer in the USA
- Treatment of glioblastoma in the USA

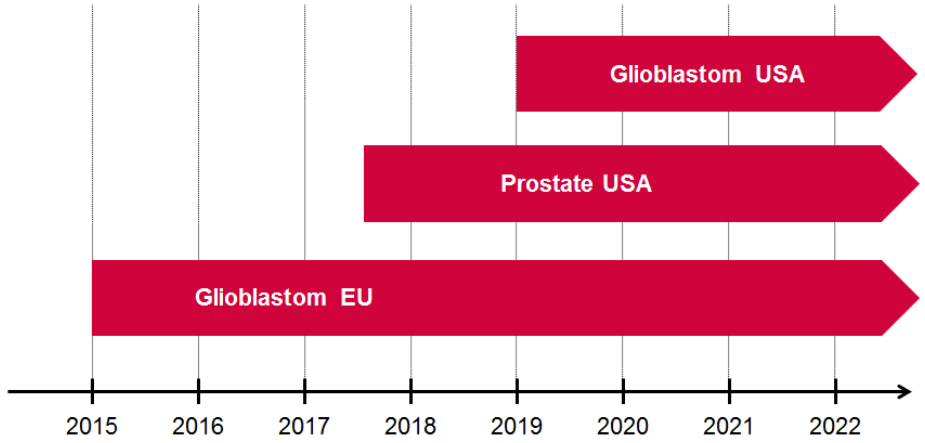
Although approval for the treatment of malignant **brain tumours** was already granted in **Europe** in 2010, the application of NanoTherm® therapy could only be transferred to the commercialisation phase in the current 2015 financial year. MagForce AG is currently conducting a post-marketing study in Europe in order to make the opinion leaders familiar with the treatment and to gather further evidence on the therapy, whereby the oncological opinion leaders will be involved at an early stage and the study's scope will be significantly enlarged. At the same time, the experts can gather experience with the novel therapeutic approach in the context of the post-marketing study. However, the company was able to start with the commercial treatment of brain tumour patients at the University Clinics in Kiel and Münster, which generates first-time revenue in the current 2015 financial year. Since treatment commenced, MagForce AG has registered increasing interest in the treatment of brain tumours, both nationally and internationally. Our expectations are that the company is likely to transform the increased interest into an increase in the number of treated patients and therefore already generate significant revenue during the post-marketing study. Financing of the European study should be therefore be covered at the same time.

The successful start of the treatment of **brain tumours** in Europe serves as a blueprint for approval in the **USA**, whereby MagForce could use half of the data already collected for the approval and thus benefit from significant time savings. In this context, it is important that the FDA has already classified the MagForce therapy as a medical technology device, which means that approval may be implemented relatively quickly and is therefore associated with less capital expenditure. We expect the first commercial treatment of glioblastoma in the US to begin early in 2019.

The approval for the much larger indication of "**prostate cancer**" in den **USA** is extremely important. A request to submit a study protocol has already been submitted to the US Food and Drug Administration (FDA) and MagForce AG has already received construc-

tive feedback. Final submission of the study file is scheduled for the first half of 2015. Dr Ben J. Lipps is expected to play an important role in the approval process in the United States due to his excellent network. Our expectations are for the first commercial prostate cancer treatment in the USA to start in as early as 2017.

To summarise, the following timetable applies for our forecasts:




*Source: MagForce AG; GBC AG*

### *Forecast principles*

**Glioblastoma Europe**

| | FY 15e | FY 16e | FY 17e | FY 18e | FY 19e | FY 20e | FY 21e |
|---|---|---|---|---|---|---|---|
| Number of cases | 14,655 | 14,755 | 14,855 | 14,956 | 15,056 | 15,156 | 15,248 |
| Patients treated | 80 | 221 | 297 | 748 | 1,506 | 2,273 | 2,668 |
| Market share | 0.0% | 1.5% | 2.0% | 5.0% | 10.0% | 15.0% | 17.5% |
| NanoActivators | 6 | 6 | 6 | 6 | 10 | 14 | 17 |
| **Revenue** | **1.88** | **5.20** | **6.98** | **17.57** | **36.58** | **54.82** | **64.01** |

*Source: GBC AG*

Assumptions:

- In parallel to the post-marketing study, the commercial treatment of brain tumour patients will be intensified in the current financial year, whereby not only German but predominantly international patients will be treated. People with glioblastoma are aware of their poor prognosis for their disease and display a high degree of willingness to use new treatments. It is assumed that the attention generated through the successful initial treatment of a commercial patient will be perceived on an international level.

- The treatment costs of German patients will be covered by health insurance, whereas foreign patients will act as self-paying patients. We estimate costs of €23,500/patient for one treatment cycle. These are comprised of the costs for the NanoTherm™ liquid as well as of the costs for the use of the NanoActivator®.

- The number of assumed patients treated is based on market share projections, which we derive from the population of new cases of glioblastoma patients in Eu-

rope. We are referring to the forecasts of GLOBOCAN with regard to cases of cancer in the brain and central nervous system. We have set up this scenario as a baseline scenario.

- Up to 160 patients can be treated with a NanoActivator® per annum. By the end of the year, MagForce AG will have installed a total of six units, which permits the treatment of almost 1,000 patients per annum. We only anticipate any need for capacity expansion through the additional installation of NanoActivators in 2019. Basically, however, other devices may already be installed abroad. With manufacturing costs of €500,000 per NanoActivator®, we have assumed that about half of the hospitals will opt for a financing mode with a five-year term.

**Prostate USA**

| | FY 15e | FY 16e | FY 17e | FY 18e | FY 19e | FY 20e | FY 21e |
|---|---|---|---|---|---|---|---|
| Number of cases | 258,374 | 264,749 | 271,125 | 277,500 | 283,876 | 290,251 | 295,525 |
| Patients treated | 0 | 0 | 1,356 | 4,163 | 5,678 | 7,256 | 8,866 |
| Market share | 0.0% | 0.0% | 0.5% | 1.5% | 2.0% | 2.5% | 3.0% |
| NanoActivators | 0 | 0 | 14 | 38 | 44 | 48 | 55 |
| **Revenue** | **0.00** | **0.00** | **12.24** | **35.70** | **46.02** | **58.45** | **71.63** |

*Source: GBC AG*

Assumptions:

- The approval of the NanoTherm® therapy as a medical technology device for the treatment of prostate cancer in the USA is expected to be granted by 2017. Due to the superior properties with significantly fewer incidental risks and a high efficacy already proven in a preliminary study, MagForce AG is expected to achieve rapid growth in the number of treatments. Especially when compared with a form of standard radiation treatment, in which radioactively loaded metal pins (seeds) are permanently implanted in the prostate, the readiness for use of NanoTherm® should be significantly higher.

- **Due to the high population in the number of patients affected and the relatively diverse syndromes in the case of prostate cancers, we assume at least a relatively low market penetration in the USA.** Nevertheless, we expect a rapid increase in treatment figures by the year 2019 then amounting to more than 5,500 patients per year.

- For application in the indication of prostate cancer, MagForce AG has to adapt the NanoActivators. In comparison to those applied for glioblastoma, these are considerably smaller and less expensive accordingly. MagForce AG plans to distribute up to 400 NanoActivator® devices in the USA in the coming years at costs of around $100,000 per activator. Based on our calculated number of patients and a much higher capacity per unit compared to glioblastoma, we anticipate a significantly lower number of installations. Given the lower purchasing costs, it should be easy for treatment centres to finance the investment.

- The estimated treatment costs totalling €8,000 per patient suffering from prostate cancer are also well below those in the indication of glioblastoma. In principle, the material expenses are likely to be kept within limits and we therefore expect a gross profit margin of 80%.

**Glioblastoma USA**

| | FY 15e | FY 16e | FY 17e | FY 18e | FY 19e | FY 20e | FY 21e |
|---|---|---|---|---|---|---|---|
| Number of cases | 11,436 | 11,615 | 11,794 | 11,974 | 12,153 | 12,333 | 12,510 |
| Patients treated | 0 | 0 | 0 | 0 | 61 | 185 | 250 |
| Market share | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 1.5% | 2.0% |
| NanoActivators | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| **Revenue** | **0.00** | **0.00** | **0.00** | **0.00** | **1.82** | **3.80** | **5.10** |

*Source: GBC AG*

Assumptions:

- The commercial success in the treatment of glioblastoma in Europe serves as basis for the expansion of this therapeutic area to the USA, whereby MagForce AG should be able to use half of the data from the European studies for approval in the USA, which should therefore result in a corresponding reduction in the approval procedure. According to our expectations, the first commercial treatment of a brain tumour patient in the US should take place in 2019.

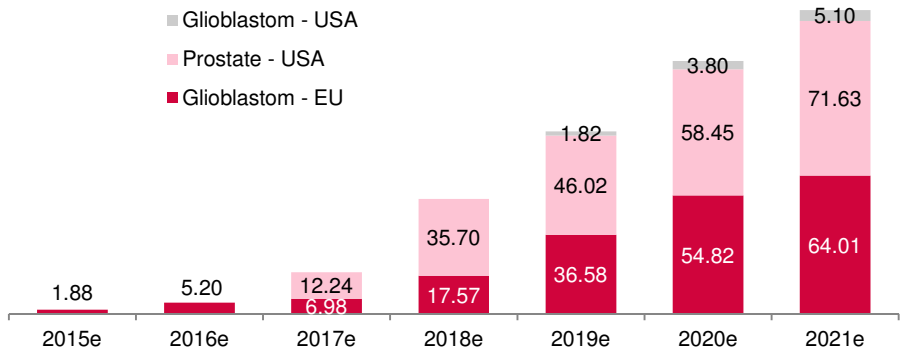
- At the beginning of the commercialisation phase, we assume a similar development of market shares as in Europe. This is a conservative assumption, since corresponding success in Europe should generate a lot of attention. This should result in an appropriately higher acceptance of this treatment method in the US right from the outset.

- With regard to sales forecasts and the cost of installing the NanoActivator® devices, we apply similar assumptions as in Europe. The forecast treatment costs per patient, paid either by health insurance or privately, are estimated to total €20,000 per patient. The gross margin is expected to amount to approximately 80%.

### *Sales and earnings forecasts*

Based on the aforementioned factors, the three streams of revenue result in the following sales projections:

**Sales forecasts (in € million)**

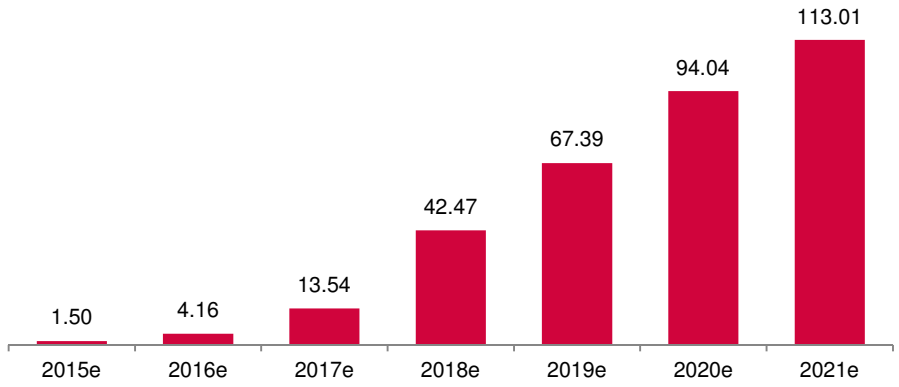



*Source: GBC AG*

Here, the importance of the treatment of glioblastoma in Europe and of prostate cancer in the USA becomes evident in the distribution of turnover according to revenue segments. We assume a relatively lean material cost structure, which should permit a gross profit margin of around 80%. However, since the ongoing studies will initially still gener-

ate cost burdens, the targeted gross margin level of about 80% will be achieved only following the last approval (glioblastoma USA).

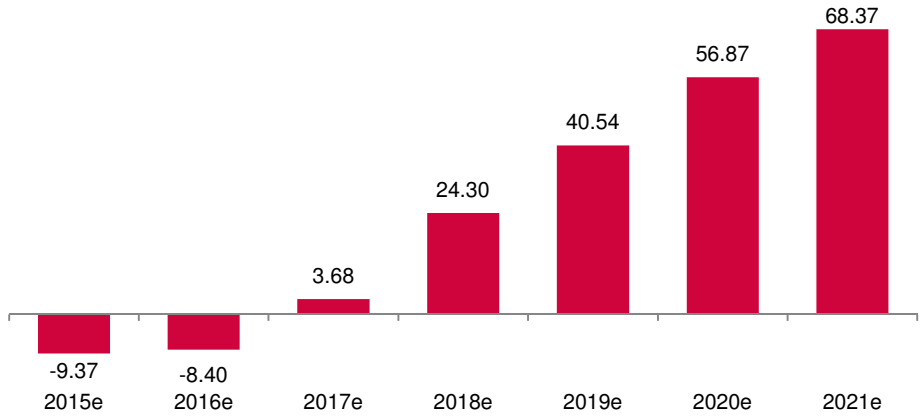
**Gross profit (€ million) and gross profit margin (in %)**




*Source: GBC AG*

With a corresponding increase in revenue, MagForce AG has a highly scalable business model at its disposal, with essential features being the lean structure of overhead costs which should, as expected, increase only at a proportionally lower rate when compared to sales growth. We have taken this into account in our forecasts and consequently also assume a high quality result on EBIT level. With our conservative approach, we have however expected a stabilisation of the EBIT margin from the 2018 financial year onwards, although a gradual improvement in the margins is highly likely. The assumed results form the basis for our DCF valuation model.

**EBIT (in € million) and EBIT margin (in %)**




*Source: GBC AG*

The revenue in the USA (glioblastoma and prostate cancer) will be achieved at the level of the 76.9% subsidiary MagForce USA, Inc. In our DCF valuation model, we have accordingly taken into account the minority interests, resulting in a reduction in the fair company value.

# VALUATION

## Model assumptions

We rated MagForce AG using a DCF model. Based on the company's commercialisation plan for the years 2014 to 2021, we have created concrete sales and profit estimates. Due to the accumulated losses carried forward, we have only taken into account a tax rate of 30% from the 2019e financial year. Additionally, a residual value is determined in the third phase by using the perpetual annuity by the end of the forecast horizon. As the final value, we assume a sales growth rate of 4.0%.

## Determining of capital costs

The weighted average cost of capital (WACC) of MagForce AG is calculated from the capital cost and the cost of debt. The market premium, the company-specific beta, as well as the risk-free rate have to be determined in order to determine the equity cost.

**Note: Since 28.01.2015 we are no longer using the interest rate on ten-year government bonds (with a minimum interest rate of 2.0%) to determine the risk-free interest rate, but rather have switched to a new methodology instead.**

The risk-free interest rate is now derived in accordance with the recommendations of the expert committee for company valuations and business administration (FAUB) of the IDW (Institut der Wirtschaftsprüfer in Deutschland e.V.) from the current interest rate yield curves for risk-free bonds. The zero bond interest rates according to the Svensson method published by the German Federal Bank form the underlying basis. To smooth out short-term market fluctuations, we use the average yields over the previous three months and round up the result to 0.25 basis points. **The value of the currently used risk-free interest rate is 1.00%.**

We set the historical market premium of 5.50% as a reasonable expectation of the market premium. This is supported by historical analyses of stock market returns. The market premium reflects by which percentage the stock market is expected to be more profitable than the low-risk government bonds.

According to GBC estimates, a beta of 2.04 is currently determined.

Using the assumptions implied, cost of equity is calculated to amount to 12.20% (Beta multiplied by the risk premium plus the risk-free interest rate). Since we assume a sustainable weighting of the equity costs of 90%, the resulting weighted average costs of capital (WACC) amount to 11.30%.

## Evaluation results

The discounting of future cash flows is based on the entity approach. In our calculation, the result for the corresponding weighted average cost of capital (WACC) is 11.30%. The resulting fair value per share at the end of the 2015 financial year corresponds to the stock price target of €13.20.

# DCF-VALUATION

## MagForce AG - Discounted Cashflow (DCF) Valuation

**Value driver of DCF-model after the estimate phase:**

| consistency - Phase | |
|---|---|
| EBITDA-margin | 48.7% |
| Working Capital to sales | 10.2% |

| final - Phase | |
|---|---|
| Perpetual growth rate | 4.0% |
| Perpetual EBITA margin | 50.0% |
| Taxe rate terminal value | 30.0% |

**Three phases DCF - Model:**

| Phase | estimate | | | | | | | | Terminal |
|---|---|---|---|---|---|---|---|---|---|
| in €m | FY 14e | FY 15e | FY 16e | FY 17e | FY 18e | FY 19e | FY 20e | FY 21e | value |
| Sales | 0.00 | 1.88 | 5.20 | 19.23 | 53.27 | 84.42 | 117.07 | 140.74 | |
| *Sales change* | neg. | neg. | 176.7% | 269.7% | 177.1% | 58.5% | 38.7% | 20.2% | 4.0% |
| Sales to fixed assets | -1.06 | -9.25 | -8.26 | 3.84 | 24.47 | 40.71 | 57.04 | 68.54 | |
| *EBITDA* | neg. | neg. | neg. | 20.0% | 45.9% | 48.2% | 48.7% | 48.7% | |
| EBITDA-margin | -1.30 | -9.37 | -8.40 | 3.68 | 24.30 | 40.54 | 56.87 | 68.37 | |
| *EBITA* | neg. | -498.5% | -161.6% | 19.1% | 45.6% | 48.0% | 48.6% | 48.6% | 50.0% |
| EBITA-margin | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -12.16 | -17.06 | -20.51 | |
| *Taxes on EBITA* | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.0% | 30.0% | 30.0% | 30.0% |
| Taxes to EBITA | -1.30 | -9.37 | -8.40 | 3.68 | 24.30 | 28.38 | 39.81 | 47.86 | |
| EBI (NOPLAT) | -66.4% | -323.1% | -195.4% | 76.8% | 349.6% | 147.3% | 130.4% | 113.1% | 104.4% |
| Return on capital | | | | | | | | | |
| | 0.50 | 1.50 | 0.80 | 1.95 | 5.41 | 8.57 | 11.88 | 14.28 | |
| *Working Capital (WC)* | neg. | 79.8% | 15.4% | 10.2% | 10.2% | 10.2% | 10.2% | 10.2% | |
| *WC to sales* | -0.86 | -1.00 | 0.70 | -1.15 | -3.46 | -3.16 | -3.31 | -2.40 | |
| Investment in WC | 2.40 | 2.80 | 3.99 | 5.00 | 13.85 | 21.95 | 30.45 | 34.80 | |
| *Operating fixed assets (OFA)* | -0.24 | -0.13 | -0.14 | -0.16 | -0.17 | -0.17 | -0.17 | -0.17 | |
| *Depreciation on OFA* | 10.0% | 4.5% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | |
| *Depreciation to OFA* | -0.32 | -0.53 | -1.33 | -1.17 | -9.02 | -8.27 | -8.66 | -4.52 | |
| Investment in OFA | 2.90 | 4.30 | 4.79 | 6.95 | 19.26 | 30.52 | 42.33 | 49.08 | |
| Capital employed | | | | | | | | | |
| | -1.06 | -9.25 | -8.26 | 3.84 | 24.47 | 40.71 | 57.04 | 68.54 | |
| EBITDA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -12.16 | -17.06 | -20.51 | |
| Taxes on EBITA | -1.18 | -1.53 | -0.63 | -2.32 | -12.48 | -11.43 | -11.98 | -6.93 | |
| *Total investment* | -0.32 | -0.53 | -1.33 | -1.17 | -9.02 | -8.27 | -8.66 | -4.52 | |
| *Investment in OFA* | -0.86 | -1.00 | 0.70 | -1.15 | -3.46 | -3.16 | -3.31 | -2.40 | |
| *Investment in WC* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Investment in Goodwill | -2.24 | -10.77 | -8.89 | 1.52 | 11.99 | 17.12 | 28.00 | 41.10 | 675.06 |

| | | |
|---|---|---|
| Value operating business (due date) | 355.35 | 406.27 |
| *Net present value explicit free CF* | 36.24 | 51.11 |
| *Net present value of terminal value* | 319.11 | 355.16 |
| Net debt | -11.54 | -0.77 |
| Value of equity | 366.90 | 407.04 |
| Minority interests | -62.10 | -68.89 |
| Value of share capital | 304.80 | 338.15 |
| Outstanding shares in m | 25.62 | 25.62 |
| Fair value per share in € | 11.90 | **13.20** |

**Cost of capital:**

| | |
|---|---|
| Risk free rate | 1.0% |
| Market risk premium | 5.5% |
| Beta | 2.04 |
| Cost of equity | 12.2% |
| Target weight | 90.0% |
| Cost of debt | 4.5% |
| Target weight | 10.0% |
| Taxshield | 28.7% |
| | |
| WACC | **11.3%** |

# ANNEX

**Section 1 Disclaimer and exclusion of liability**

This document is intended solely for information purposes, All data and information in this study come from sources that GBC regards as reliable, In addition, the authors have taken every care to ensure that the facts and opinions presented here are appropriate and accurate, Nevertheless, no guarantee or liability can be accepted for their correctness – whether explicitly or implicitly, In addition, all information may be incomplete or summarised, Neither GBC nor the individual authors accept liability for any damage which may arise as the result of using this document or its contents, or in any other way in this connection,

We would also point out that this document does not constitute an invitation to subscribe to nor to purchase any securities and must not be interpreted in this way, Nor may it nor any part of it be used as the basis for a binding contract of any kind whatsoever, or be cited as a reliable source in this context, Any decision relating to the probable offer for sale of securities for the company or companies discussed in this publication should be taken solely on the basis of information in the prospectuses or offer documents which are issued in relation to any such offer,

GBC does not provide any guarantee that the indicated returns or stated target prices will be achieved, Changes to the relevant assumptions on which this document is based can have a material impact on the targeted returns, Income from investments is subject to fluctuations, Investment decisions should always be made with the assistance of an investment advisor, This document cannot replace the role of an advisor,

**Sale outside the Federal Republic of Germany:**

This publication, if sold in the UK, may only be made available to those persons who, in the meaning of the Financial Services Act 1986 are authorised and exempt, or persons as defined in section 9 (3) of the Financial Services Act 1986 (Investment Advertisement) (Exemptions) Decree 1988 (amended version) and must not be transmitted directly or indirectly to other persons or groups of persons,

Neither this document nor any copy of it may be taken into, transferred to or distributed within the United States of America or its territories and possessions, The distribution of this document in Canada, Japan or other jurisdictions may be restricted by law, and persons who come into possession of this publication should find out about any such restrictions and respect them, Any failure to respect these restrictions may represent a breach of the US, Canadian or Japanese securities laws or laws governing another jurisdiction,

By accepting this document you accept all disclaimers of liability and the restrictions cited above,

You can find the details of this disclaimer/exclusion of liability at:
**http://www,gbc-ag,de/de/Disclaimer,htm**

**Legal information and disclosures as required by section 34b para, 1 of Securities Trading Act (WpHG) and Financial Analysis Directive (FinAnV)**

This information can also be found on the internet at the following address::
**http://www,gbc-ag,de/de/Offenlegung,htm**

**Section 2 (I) Updates**

A detailed update of the present analysis/analyses at any fixed date has not been planned at the current time, GBC AG reserves the right to update the analysis without prior notice,

**Section 2 (II) Recommendation/ Classifications/ Rating**

Since 1/7/2006 GBC AG has used a 3-level absolute share rating system, Since 1/7/2007 these ratings relate to a time horizon of a minimum of 6 to a maximum of 18 months, Previously the ratings related to a time horizon of up to 12 months, When the analysis is published, the investment recommendations are defined based on the categories described below, including reference to the expected returns, Temporary price fluctuations outside of these ranges do not automatically lead to a change in classification, but can result in a revision of the original recommendation,

**The recommendations/ classifications/ ratings are linked to the following expectations:**

| | |
|---|---|
| BUY | The expected return, based on the derived target price, incl, dividend payments within the rel 10 %, |
| HOLD | The expected return, based on the derived target price, incl, dividend payments within the rel 10 % and < + 10 %, |
| SELL | The expected return, based on the calculated target price, incl, dividend payments within the <= - 10 %, |

GBC AG's target prices are determined using the fair value per share, derived using generally recognised and widely used methods of fundamental analysis, such as the DCF process, peer-group benchmarking and/or the sum-of-the-parts process, This is done by including fundamental factors such as e,g, share splits, capital reductions, capital increases, M&A activities, share buybacks, etc,

**Section 2 (III) Past recommendations**
Past recommendations by GBC on the current analysis/analyses can be found on the internet at the following address:
**http://www.gbc-ag.de/de/Offenlegung.htm**

**Section 2 (IV) Information basis**
For the creation of the present analysis/analyses publicly available information was used about the issuer(s) (where available, the last three published annual and quarterly reports, ad hoc announcements, press releases, share prospectuses, company presentations, etc,) which GBC believes to be reliable, In addition, discussions were held with the management of the company/companies involved, for the creation of this analysis/these analyses, in order to review in more detail the information relating to business trends,

**Section 2 (V) 1, Conflicts of interest as defined in section 34b para, 1 of the Securities Trading Act (WpHG) and Financial Analysis Directive (FinAnV)**
GBC AG and the analysts concerned hereby declare that the following potential conflicts of interest exist for the company/companies described, at the time of this publication, and in so doing meet the requirements of section 34b of the Securities Trading Act (WpHG), A detailed explanation of potential conflicts of interest is also listed in the catalogue of potential conflicts of interest under section 2 (V) 2,

**In relation to the security or financial instrument discussed in this analysis the following possible conflict of interest exists: (5a; 5b; 11)**

**section 2 (V) 2, Catalogue of potential conflicts of interest**
(1) GBC AG or a legal person connected to them holds shares or other financial instruments of this company at the time of publication,
(2) This company holds over 3 % of the shares in GBC AG or a legal person connected to them,
(3) GBC AG or a legal person connected to them is a market maker or designated sponsor for the financial instruments of this company,
(4) GBC AG or a legal person connected to them has, over the previous 12 months, organised or played a leading role in the public issue of financial instruments for this company,
(5) a) GBC AG or a legal person connected to them has over the last 12 months agreed to create research reports for this company in return for payment, As part of this agreement the issuer was shown the draft of this analysis (excluding the evaluation section) prior to publication,
(5) b) After receiving valid amendments by the analysed company, the draft of this analysis was changed,
(6) a) GBC AG or a legal person connected to them has over the last 12 months agreed with a third party to create research reports about this company in return for payment, As part of this agreement the issuer was shown the draft of this analysis (excluding the evaluation section) prior to publication,
(6) b) After receiving valid amendments by the third party, the draft of this analysis was changed,
(7) The analyst responsible for this report holds shares or other financial instruments of this company at the time of publication,
(8) The analyst responsible for this company is a member of the company's Executive Board or Supervisory Board,
(9) The analyst responsible for this report received or purchased shares in the company analysed by said analyst, prior to the time of publication,
(10) GBC or a related legal party has closed an agreement with the underlying company regarding consulting services during the previous 12 months,
(11) GBC or a related legal party has a significant financial interest in the analysed company, for example to get mandated by the analysed company or to provide any kind of services (like the organization of fair, roundtables, road shows etc,),

**Section 2 (V) 3, Compliance**

GBC has defined internal regulatory measures in order to prevent potential conflicts of interest arising or, where they do exist, to declare them publicly, Responsibility for the enforcement of these regulations rests with the current Compliance Officer, Susanne Klebl, Email: klebl@gbc-ag,de

**Section 2 (VI) Responsibility for report**

The company responsible for the creation of this/these analysis/analyses is GBC AG, with registered office in Augsburg, which is registered as a research institute with the responsible supervisory authority (Federal Financial Supervisory Authority or BaFin, Lurgiallee 12, 60439 Frankfurt, Germany),

GBC AG is currently represented by its board members Manuel Hölzle (Chairman), Jörg Grunwald and Christoph Schnabel,

The analysts responsible for this analysis are:
**Cosmin Filker, Dipl. Betriebswirt (FH), Finanzanalyst**
**Felix Gode CFA, Dipl. Wirtschaftsjurist (FH), stellvertr. Chefanalyst**

Other person involved:
**Manuel Hölzle, Dipl. Kaufmann, Chefanalyst**

**Section 3 Copyright**



GBC AG
Halderstraße 27
D 86150 Augsburg
Tel,: 0821/24 11 33-0
Fax,: 0821/24 11 33-30
Internet: http://www,gbc-ag,de

E-Mail: compliance@gbc-ag,de

**GBC AG®**

**- R E S E A R C H & I N V E S T M E N T A N A L Y S E N -**

GBC AG
Halderstraße 27
86150 Augsburg
Internet: http://www.gbc-ag.de
Fax: ++49 (0)821/241133-30
Tel.: ++49 (0)821/241133-0
Email: office@gbc-ag.de