STATUS REPORT

COEGIN PHARMA

COEGIN PHARMA – A NEW APPROACH TO CANCER THERAPY

INTRODUCTION

INTRODUCTION

While cancer therapy innovation has brought new treatments to the market over the last couple of decades, cancer remains one of the leading causes of death worldwide. The Nordic biotech Coegin Pharma is responding to calls for new, innovative cancer therapeutics by offering a novel approach to cancer treatment through the inhibition of a unique and extremely well-validated target, the cPLA$_2\alpha$ enzyme. With more than 30 years of basic and applied research at its back, Coegin Pharma has the scientific expertise to enter into the next phase of development, initiating clinical studies for evaluating its therapeutic candidates in actinic keratosis, a common pre-cancerous condition with limited treatment options, and several cancer indications associated with high unmet medical need.

A recent report from the **World Health Organization** (WHO) estimates that approximately 9.6 million people died of cancer in 2018, globally. And while the overall mortality rate from cancer has decreased over the last 30 years, many cancers, while not necessarily deadly, become chronic diseases, thus adding a significant burden on suffering patients.

Putting additional pressure on healthcare systems are pre-cancerous diseases, of which there is still a serious lack of awareness. One example is a*ctinic keratosis* (AK), a precancerous condition of the skin. AK skin lesions, which are a sign of chronic inflammation caused by high exposure to harmful UV rays from the sun and, if left untreated, they can develop into more serious diseases including *squamous cell carcinoma* (SCC), a cancer of the skin that is potentially life-threatening.

Lack of effective and safe treatments

Despite the fact that today's healthcare can offer a larger selection of cancer treatments than ever before - e.g. radiation therapy, chemotherapy and immunotherapy - cancer remains among the top causes of death globally, and chronic cancers such as *chronic lymphocytic leukaemia* (CLL) continue to lack proper treatments. Thus, the need for novel treatments remains of the utmost importance.

One of the main challenges with current treatment strategies for cancer is that they rely on a 'one-size-fits-all' model, meaning that many cancer patients, no matter the type of cancer afflicting them, are given a general treatment, or combination of treatments, in the hopes of stopping cancer growth and prolonging survival.

Such strategies give far from optimal outcomes because cancer is not one disease, but a range of diseases caused by the uncontrolled proliferation of cells within specific parts of the body. Thus, each case of cancer behaves differently depending on factors like the type of cancer, genetic variations in patients and resistance to currently available drugs that occurs in many patients.

Similar challenges exist for precancerous diseases like AK. For AK, specifically, available treatments are often invasive and painful, like cryotherapy or photodynamic therapy (PDT), while other treatments, like topical creams, consist of lengthy daily regimens that can last several weeks if not months.

Therefore, the need for new cancer or precancer treatments and especially targeted therapies for specific patient populations leading to better outcomes and fewer side effects remains high.

INTRODUCTION

A promising target

Coegin Pharma's ambition to develop new cancer therapies is based on pioneering science led by Professor **Berit Johansen** at the **Norwegian University of Science and Technology** (NTNU). Professor Johansen was the first to identify the pro-inflammatory roles and signalling cascades of the cPLA$_2\alpha$ enzyme - an enzyme that plays an essential role in regulating disease-causing mechanisms like inflammation, hyperproliferation of cells and fibrosis.

Professor Johansen's extensive research in immunology and the role of the cPLA$_2\alpha$ enzyme in disease regulation has led Coegin Pharma to develop two distinct classes of highly potent and selective molecules able to inhibit cPLA$_2\alpha$, thus leading to remarkable attenuation of inflammation, cancer and fibrosis. In fact, Coegin Pharma obtained proof-of-concept (PoC) in psoriasis patients in 2015.

Focus on cancer and actinic keratosis

Since then, the company saw an opportunity to use those findings and shift focus from psoriasis to cancer, where the demand for new treatments is much higher and urgent. Moreover, Coegin Pharma recognized that its treatment strategy had the potential to provide a form of targeted therapy within oncology, as the company would be able to hit tumours where cPLA2α is overexpressed, thus allowing for selection of subindications particularly sensitive to the new treatment.

Giving Coegin Pharma's classes of cPLA$_2\alpha$ inhibitors even more therapeutic potential is the fact that the inhibitors have in several cases shown a clear synergistic effect with commonly used drugs, thus opening up possibilities for combination therapies aimed at increasing the therapeutic outcome while reducing the side effects of existing.

Strong managerial team in place

Seeing the enormous business potential by targeting cPLA$_2\alpha$, Coegin Pharma took steps to translate its R&D capabilities into a business. While founder Professor Berit Johansen remains the backbone of the company and is the company's current CSO, Coegin Pharma started putting together a strong team of leaders with extensive entrepreneurial experience within the life science arena.

The company brought onboard **Tore Duvold**, first as a board member and then as CEO. Duvold has more than 20 years of experience as a leader in life science business, including top managerial experience for high-profile companies specialised in chronic inflammation. Other members of the board include **Jesper Kihl, Lars Persson, Niclas Lundqvist** and **Erlend P. Skagseth**, all of whom bring years of managerial and venture capital experience to Coegin Pharma.

Road to the clinic

Recently listed on the **NGM Nordic SME** market and with an experienced board and management in place to execute on their new strategic focus, Coegin Pharma intends to enter combined phase I/II clinical trials with its lead candidate in 2021 for determining proof-of-concept in the treatment of AK. The company will do so by leveraging the past topical development efforts in psoriasis.

From there, Coegin Pharma will expand into basal cell carcinoma, the most common form of skin cancer. In parallel the company will expand its pipeline within other cancer indications such as *leukaemia* and *triple negative breast cancer* (TNBC) and aims to select its systemic drug candidate in Q1 2021.

Moving forward, Coegin Pharma plans to conduct a first-in-man clinical study in the selected cancer indications in 2022. In the meantime, the company is pursuing projects within chronic kidney disease and fibrosis where cPLA$_2\alpha$ inhibitors have shown remarkable antifibrotic effects in relevant animal models. The promising preclinical results in chronic kidney disease support a clear rational for the treatment of fibrotic diseases by the company's cPLA$_2\alpha$ inhibitors and is considered as a promising spin-off opportunity.

UPCOMING TRIGGERS

UPCOMING TRIGGERS

Key milestones

Actinic Keratosis

- Clinical Trial Application (CTA) for a cPLA$_2$α inhibitor in actinic keratosis in Q1 2021
- First patient included in Q3 2021
- Last patient out in Q4 2021
- Topline data available January 2022

Cancer indications

- Selection of candidates for Leukaemia and TNBC in Q1 2022
- CTA in Q2 2022

THE COMPANY IN BRIEF

THE COMPANY IN BRIEF

1998 The first publication by Professor Berit Johansen and her research team at NTNU, describing the importance of the cPLA$_2\alpha$ enzyme as a regulator of cytokine-induced proinflammatory transcription factor NF-KB activation in human skin.

2005 The company **Avexxin** was founded to develop novel treatments of inflammatory diseases.

2014 New potent and selective inhibitors were identified for treating cancer, including skin cancers and TNBC

2015 Proof-of-concept achieved with a cPLA$_2\alpha$ inhibitor in mild-to-severe psoriasis

2019 Avexxin changed its name to Coegin Pharma

2020 New board and management appointed to carry out a revised strategy, focusing on developing new cancer treatments. A reverse take over was completed with **Goldblue** in order to gain access to the stock market. Coegin Pharma was listed under its new name at NGM Nordic SME on October 13 2020.

Market	NGM Nordic SME	Number of shares	513 436 363
Ticker	COEGIN	Share price 2020-12-17	SEK 0.241
ISIN	SE0014262218	Market cap 2020-12-17	SEK 114 496 309

Coegin Pharma currently has approximately 4 000 shareholders. **Almi Invest Syd, Sarsia Seed** and **Rune Löderup** are among the larger shareholders of the company.

With their strategic shift into cancer, Coegin Pharma has appointed a new board with extensive experience from biopharma, pharmaceutical and medtech companies. With CEO Tore Duvold and a firm scientific foundation led by professor Berit Johansen, together with a scientific advisory board with leading experts in the field, Coegin Pharma is ready to execute on their new strategic plan.

THE COMPANY IN BRIEF – MANAGEMENT

Tore Duvold, PhD in Biochemistry
CEO *and* ***board member***

Tore as more than 20 years of experience in life science as CEO for **AKER Biopharma** and as Senior VP and part of top management of **LEO Pharma**. Tore also have held position as CEO for **Innovation Fund Denmark** and being member of several advisory boards.

Professor Berit Johansen, PhD in Molecular Genetics
Founder *and* **CSO**

Berit is the main inventor and has been active in Coegin Pharma from the start in 2005. She has an extensive academic record, including several positions at research institutes in the Nordics, the US and Europe, e.g. Molecular Biology at **UCLA**, visiting scientist at **Biogen Research Corporation, Harvard Medical School,** Biomedical Centre at **Uppsala University**, and the Institute of Molecular Genetics at **Göttingen University**.

THE COMPANY IN BRIEF – BOARD MEMBERS

Niclas Lundqvist, LL. M.
Chairman of the board

Niclas has vast experience as board member in several listed companies, e.g. the life science companies **RhoVac** and **Cantargia**. He has previously also held positions at the **Swedish National Courts Administration** and practising law specialising in corporate finance and contract law.

Erlend P. Skagseth, MBA
Board member

Erlend has more than 30 years of experience from R&D based project management and business development and has also experience of more than 15 years in VC investments. He is currently managing partner at **Sarsia Seed**.

Jesper Kihl, MSc Chemical Engineering
Board member

Jesper has more than 40 years experience within life science and medtech, mostly from leading positions in organisations such as **Novo Nordisk** and **LEO Pharma.** He is also member of several scientific advisory boards. Jesper has previously developed and marketed therapies in actinic keratosis at LEO Pharma.

Lars Persson, MSc Chemistry
Board member

Lars have more than 25 years of experience from leading positions in life science and medtech. He has experience from organisations such as **Atos Medical, Industrifonden, Almi Invest Syd** and is board member in several companies.

Tore Duvold, PhD in Biochemistry
CEO** and **board member

Tore as more than 20 years of experience in life science as CEO for **AKER Biopharma** and as Senior VP and part of top management of **LEO Pharma.** Tore also have held position as CEO for **Innovation Fund Denmark** and being member of several advisory boards.

THE COMPANY IN BRIEF – SCIENTIFIC ADVISORS

Professor Edward A. Dennis, international expert in PLA2
Department of Chemistry Biochemistry, ***University of California****, San Diego, USA.*

Vast background understanding how phospholipase A2 functions and how to control its activity offer important insights for developing potent pharmacological agents for controlling numerous diseases.

Professor Joseph Bonventre, international expert in renal diseases and PLA2
Brigham and Women's Hospital, Renal Unit, ***Harvard Medical School****, Boston, USA*

Professor George Kokotos, international expert in chemical synthesis of PLA2 compounds
Laboratory of Organic Chemistry, ***University of Athens****, Greece.*

Professor Jørgen Serup, international expert in skin diseases
Department of Dermatology, ***Bispebjerg University Hospital****, Copenhagen, Denmark.*

BUSINESS MODEL AND THERAPEUTIC PLATFORM

BUSINESS MODEL

The company's ambition is to position itself as an innovative biotech company offering a new generation of unique medicine to cancer patients in great need for better solutions. The company's vision is based upon findings from years of world class research regarding a key disease-causing target, the cPLA$_2\alpha$ enzyme.

Thanks to discoveries led by Coegin Pharma founder, Professor Berit Johansen, the company has developed drug candidates based on two distinct chemical classes of cPLA$_2\alpha$ enzyme inhibitors able to have a profound impact on cancer and inflammation.

Strategically, the company is aiming to advance its candidates from discovery to clinical phase II proof-of-concept before considering partnerships or licensing deals.

A bold vision for novel cancer therapeutics

The first chemical class forms the basis for Coegin Pharma's first candidate, a topical cPLA$_2\alpha$ inhibitor that demonstrated proof-of-concept in a combined phase I/II clinical study in psoriasis patients. Now, in a strategic pivot putting more focus on cancer indications, the company aims to evaluated the drug in actinic keratosis – a common precancerous disease of the skin that involves many of the same disease mechanisms known in psoriasis patients where cPLA$_2\alpha$ enzyme inhibitors have proved their value. The company's project in AK is planned for a phase I/II trial starting in 2021 with top-line results already in Q1 2022.

The second chemical class of cPLA$_2\alpha$ inhibitors, designed for systemic administration, has been found to be highly efficacious, in different preclinical cancer models and will be pursued in leukaemia and TNBC.

THERAPEUTIC PLATFORM

Coegin Pharma's scientific platform is based on decades of research conducted by Professor Berit Johansen and her team at the NTNU on the importance of the enzyme cPLA$_2$α and its role in the cellular landscape.

In 1998, Johansen and her colleagues published findings showing for the first time that the cPLA$_2$α enzyme plays an essential role in regulating an inflammatory mechanism in keratinocytes, the primary cell type found in the outermost layer of human skin.

The discovery was followed by research on how cPLA$_2$α-mediated mechanisms applied to other cell types, which laid the foundation for identifying and documenting the cPLA$_2$α enzyme as a possible therapeutic target.

The target: cPLA$_2$α enzyme

cPLA$_2$α is an enzyme that regulates the production of arachidonic acid and other bioactive lipid mediators that play a well-established role in several diseases. Arachidonic acid is a prominent fatty acid that resides in the cell membrane, and on which the body relies for promoting and resolving inflammation. This makes it a relevant player in chronic inflammatory, neurodegenerative diseases, as well as cancer.

Studies have shown that mice in which the cPLA$_2$α enzyme had been deactivated expressed resistance to several complications like anaphylactic responses, acute respiratory distress syndrome, collagen-induced autoimmune arthritis and autoimmune diabetes. The mice also showed a reduced incidence of cancer.

There is also data on cancer patients indicating that patients with an overexpression of cPLA$_2$α often have a shorter life expectancy and higher mortality rate compared to patients with a normal expression of the enzyme.

Proof-of-concept in psoriasis

A lead candidate compound was developed as a topical treatment of mild-to-moderate psoriasis, an inflammatory disease of the skin where keratinocytes are heavily affected. The candidate showed promising results in a phase I/II clinical study in 2015, providing the company with the first human proof-of-concept (PoC).

Shift into cancer

At the same time, Professor Berit Johansen and her team had identified several other potent and selective cPLA$_2$α inhibitors that could potentially be used for treating different types of cancer, like skin cancer, leukaemia and TNBC. Several of these cancers, and also other cancers, are characterized by cPLA$_2$α overexpression in patients, suggesting a central role for the enzyme in cancer development. Thus, identifying the enzyme as a potent therapeutic candidate. Interestingly, animal models showed that cPLA$_2$α inhibitors are highly relevant for treating fibrotic diseases in the kidney and the lungs.

INDICATION AREAS

HIGH UNMET MEDICAL NEED IN ACTINIC KERATOSIS

Actinic Keratosis is a common disease of the skin that can lead to cancer. While the incidence of the disease is high, awareness is low, so too often it is left untreated. Current treatments are either invasive and painful, or more user-friendly but inadequate.

Cancer of the skin is common, especially among fair-skinned individuals whose skin cells are more vulnerable to harmful light rays coming from the sun. According to the WHO, one third of every cancer diagnosis is a skin cancer, and about three million people are diagnosed with some form of skin cancer globally every year.

Such cancers most commonly develop in one of the three cell types of the epidermis, the skin's outermost layer: melanocytes, basal cells and squamous cells. Each cell type gives origin to a different type of malignant skin cancer: melanoma, which is the most aggressive, but least common, basal cell carcinoma (BCC), which accounts for about 80-90 per cent of all skin cancers, or squamous cell carcinoma (SCC).

A hidden healthcare burden

Actinic keratosis (AK) is a pre-cancerous skin disease that affects close to 60 million people in the US alone each year. AK usually presents as small, rough or scaly spots caused by exposure to the sun. They most often appear on the face, ears, backs of the hands, and arms of middle-aged or older people, and while AK itself is usually not harmful, if left untreated, it can develop into SCC and be life-threatening.

While AK is common, the lack of awareness leads to a heavy burden on patients who ignore these lesions until it is too late, and they become cancerous. Meanwhile, the most common treatment is cryotherapy – a freezing off of the lesion through liquid nitrogen that can lead to scarring, blisters, or other permanent changes to the skin.

Other treatments include topical formulations, which require several months of application, or a procedure called photodynamic therapy (PDT), which can be effective, but painful during its application. Therefore, there is a significant need for better treatments.

Market potential in AK

Coupled with a significant unmet medical need and high healthcare costs is the market potential. A successful candidate can enter the market and gain substantial market shares.

According to Grand View Research, AK was valued at 6.3 BUSD in 2018, and they forecast an annual growth rate of 4.8 per cent between 2014 and 2026. The market growth, according to analysts, will be due to an increase in disease prevalence and increased awareness of the disease.

Coegin Pharma is aiming for a substantial market share

Coegin Pharma aims to provide a safer and more efficient therapy with significantly shorter treatment periods than the current ones. The ambition is to develop a treatment that is at least as effective or superior to currently available treatments like diclofenac or imiquimod, with an excellent safety profile and limited skin irritation.

The topical treatment Coegin Pharma is developing will be a once daily treatment up to 4 weeks. The company's ambition is to gain market shares not only from existing topical or oral treatments, but also from surgery and cryotherapy and the untreated patient population. The goal is to reach annual sales of USD 200 – 400 million.

Planning for a phase I/II trial

As the project is supported by previous preclinical results from non-GLP and GLP studies, only a limited set of new studies will be required before initiating a clinical trial for the new indication.

Coegin Pharma is currently planning for a clinical phase I/II trial in AK starting in 2021. The primary endpoints will be safety, lesion reduction and reoccurrence.

Current treatment of actinic keratosis

Photodynamic treatment and surgery

According to American Cancer Society, *photodynamic therapy* (PDT) is effective for treating certain cancer forms and pre-cancer forms. American company **DUSA Pharmaceuticals**, who, in 2000, launched *Levulan* a drug used in PDT. DUSA was later acquired by **Sun Pharmaceuticals** in 2012, a deal worth about USD 230 million.

Surgery is a common treatment in BCC and SCC and it is also used in treatment of AK. Excision, curettage and electrodesiccation are surgical methods used. Sometimes surgery is combined with radiation and chemotherapy. Surgical treatments are often effective, but costly and leave scars.

Topical AK treatment

There are several topical AK treatments and there are also some oral alternatives.

Fluorouracil

Fluorouracil is a type of chemotherapy that came into medical use in 1962 and is used as a topical treatment of AK.

Imiquimod

Developed by 3M, Imiquimod was approved by the FDA in 1997 and marketed under the brand name *Aldara*. It is an immune response modifier and cytokine inducer. Imiquimod upregulates cell-mediated immunity which has been proven to be effective in AK and is also used to treat BCC. Since 2015 it is generic and sold under many brand names.

Diclofenac

Diclofenac is nonsteroidal anti-inflammatory drug (NSAID). The substance was developed by **Ciba-Geigy** (**Novartis**) in 1973 and is widely used as painkiller and for anti-inflammatory uses. In AK, a topical gel is used in combination with hyaluronic acid, that starves out the dysplastic keratinocytes, causing programmed cell death.

Other

Picato, marketed by Danish **LEO Pharma** with active substance ingenol mebutate, was withdrawn in 2020 from the European market, and the FDA also issued a warning due to risks outweighing benefits.

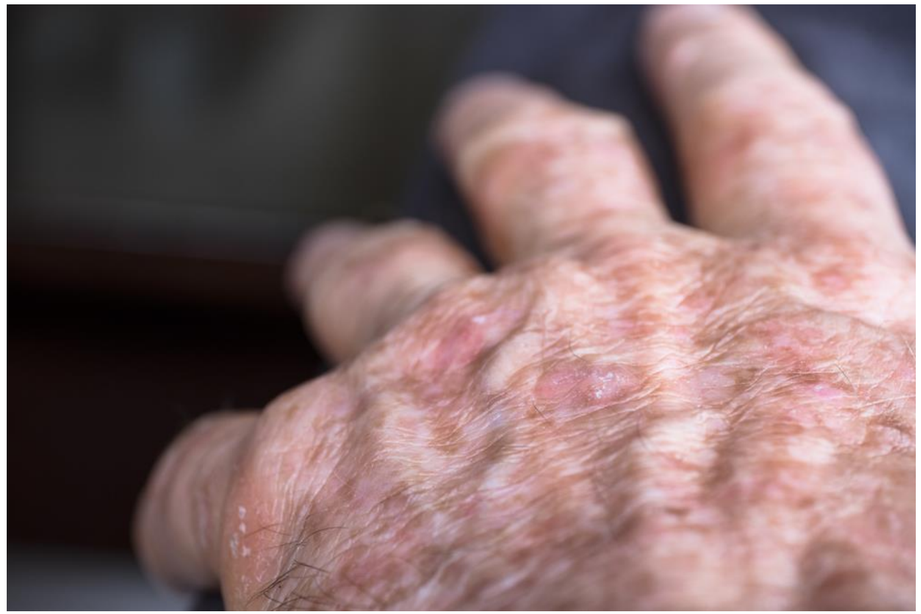
Basal cell carcinoma

AK is considered to be a pre-cancer condition, sometimes the condition can progress into more serious forms of cancer, e.g. squamous cell skin cancer (SCC) or basal cell carcinoma (BCC). These cancer forms can potentially be explored by Coegin Pharma given the advancement of the AK project. BCC is the most common form of skin cancer, about 4 million people annually are diagnosed in the US. BCC is abnormal growth of basal cells and the disease is often treatable when discovered in time.

Current treatment methods are the same as in AK, different types of surgery, photodynamic therapy, and topical medications. Radiation therapy can also be used.

A procedure called Mohs surgery has shown to be the most effective method, with very high efficiency rates. In this method, tissue is being removed and controlled with microscope until every layer of cancerogenous tissue is removed. Though effective, not all cases are suitable for Mohs surgery and the procedure is also very costly.

Another approach to treat BCC was approved in 2012. *Vismodegib*, marketed under the brand name *Erivedge* by **Roche**, is an oral BCC therapy. In 2019 Erivedge reached global sales of USD 314 million – highlighting the market potential for a more accessible treatment than surgery.



TRIPLE-NEGATIVE BREAST CANCER AND LEUKAEMIA

Triple Negative Breast Cancer

It is well known that inflammation and cancer are interlinked, and as with CKD, cPLA$_2$α has also been shown to play a role the development of cancer.

Coegin Pharma has proved strong anti-cancer effect in an animal model of TNBC with their second class of systemic molecules. Also, for this deadly disease, patient samples have shown an overexpression of cPLA$_2$α.

Studies have proved that cPLA$_2$α inhibitors can be a part in blocking the migration of metastatic cell lines. The results showed a potent, strong anti-proliferative and anti-angiogenic effect treatment with a cPLA$_2$α candidate.

Triple negative breast cancer (TNBC) is a type of cancer that does not have receptors for hormones oestrogen and progesterone or the protein HER2. This makes TNBC more difficult to treat since most hormone therapies target one of these three receptors.

Market potential TNBC

Approximately 170 000 people globally are diagnosed with TNBC every year, corresponding to 10-15 per cent of all diagnosed breast cancer. The global market for TNBC has been estimated to USD 720 million by 2026 according to **Persistent Market Research**.

Leukaemia

Coegin Pharma has conducted a cancer-screening program with several cPLA$_2$α inhibitors to identify the most relevant cancer indications to target with their inhibitors. Together with the Dutch research centre **NTRC**, the company found leukaemia and colon cancer as being particularly sensitive to the compounds.

The analysis also revealed novel mechanisms proposing a totally new mode of action of the cPLA$_2$α enzyme in leukaemia.

Market potential - leukaemia

The total leukaemia therapeutic market is projected to reach USD 12 billion in yearly turnover by 2024 according to a report from research firm **Markets and Markets**.

In late 2018, **Janssen** entered a deal for an antibody treatment developed by Belgian/Dutch company **argenx** within AML. The deal was valued to a total of USD 1.8 billion, with an upfront payment of USD 300 million. The project is currently in clinical phase II trials with first readout expected in early 2021.

Potential combination with other drugs

On top of acting on a targeted disease, research also shows that cPLA$_2$α inhibitors have the ability to synergise with other drugs. Studies have shown that the inhibition of the enzyme activity results in the potentiation of action of the partner drug in several combinations. According to Coegin Pharma, the synergising effect of its cPLA$_2$α inhibitors on several classes of drugs indicates that combination development strategies could be pursued in the clinic.

CHRONIC KIDNEY DISEASE AND FIBROSIS

Genetic studies of animals with a deactivated cPLA$_2$α enzyme have indicated that cPLA$_2$α plays a number of roles in kidney disease and the animals proved less prone to developing chronic kidney disease and fibrosis than animals with fully functional cPLA$_2$α. Affecting a lot of the same mechanisms as in chronic kidney disease (CKD), enzyme deactivation also led to weakened liver and lung fibrosis.

On top of that, queries in gene expression databases has shown an overexpression of cPLA$_2$α in patients suffering from several different kidney diseases. This fact, in combination with the above-mentioned animal models, suggest cPLA$_2$α as a very interesting and relevant therapeutic target in humans.

Coegin Pharma have seen similar results, as genetic deactivation, by using a cPLA$_2$α inhibitor in animal models where enzyme inhibition led to an improved kidney function by affecting multiple fibrotic, inflammatory and other pathways.

CKD represents a leading cause of death. There is no cure for the disease, with current treatment strategies relying on blood pressure control and glycemic control. In fact, treatments are often focused on reducing symptoms and complications.

Late-stage treatments are dialysis and kidney transplants.

One of the causes of kidney failure is fibrosis, which is accumulation non-functional static connective tissue in the kidney. Coegin Pharma has found that the presence of cPLA$_2$α plays an important role in the fibrosis process. Inhibiting cPLA$_2$α will lead to higher functionality of the kidney and affects fibrosis and inflammatory processes.

Market potential CKD

CKD is a common disease, affecting almost 10 per cent of the population and is growing by around 4.5 per cent annually; in 2018, annual sales of CKD medication was estimated to USD 12.9 billion, by 2026 the market is estimated to reach USD 15.8 billion, according to **Verified Market Research**.

New approaches addressing the cause of the disease has the potential to gain shares in this large, growing market.

BENCHMARK LICENCE DEALS

Several licensing deals in Coegin Pharma's focus areas have been announced in recent years, displaying significant commercial values and willingness to pay.

In November 2020, **Merck** acquired **Velos Bio** for USD 2.75 billion for a blood cancer drug candidate in phase II. In September **Gilead Sciences** completed their acquisition of **Immunomedics** in September 2020. Immunomedics is developing anti-body drug conjugates (ADC). Their candidate *trodelvy*, is the first FDA approved ADC to treat TNBC. The deal value amounted to USD 21 billion in aggregate.

Date	Licensee	Licensor	Area	Candidate/drug	Phase	Territory	Total deal value (USD)	Upfront (USD)
9 Nov 2020	Merck	Vera Therapeutics	CKD	atacicept	II	Worldwide	605 M	NA
20 Oct 2020	Vifor Pharma	Cara Therapeutics	CKD	IV Korsuva	II	US	340 M	100 M
29 Sep 2020	Fosun Pharma	Polyphor	Breast cancer	balixfortide	III	China	182 M	15 M
18 Aug 2020	Eli Lilly	Innovent Biologics	Blood cancer	sintilimab	III	Worldwide	1 B	200 M
18 Aug 2020	Novo Nordisk	Evotec	CKD	Platform		Worldwide	150 M per product	
20 Feb 2018	AstraZeneca	Ionis	CKD	AZD2373	I	Worldwide	300 M	30 M
11 Dec 2017	Almirall	Athenex	AK	KX2-391	III	US/EU	275 M	55 M

IP-SITUATION

IP-SITUATION

Coegin Pharma has a solid IP coverage with 20 patent families including composition of matter patents, use patents, combination patents and formulation patents.

Selected patent families listed in the table on the following page are filed in the US, Europe, Canada, Japan, Australia and in other territories such as China, Hong Kong, Republic of Korea, India, Israel, New Zealand and Norway. The patient families are valid from 2023 to 2037, with data protection for approved drugs in the US and Europe.

Data protection implies that a competitor must provide its own clinical data in order to file for approval with the FDA or the EMA.

Filing for a PCT application means that the application is preliminary examined via **World Intellectual Property Organization** (WIPO).

The company can thus obtain protection in several jurisdictions/territories with a single filing. There are currently 153 member jurisdictions/territories, including the US, China, Japan and Europe.

Divisional patents are filed when there are several inventions based on the same parent application.

Selected patent families		Granted	Pending
PCT/GB03/000364	AVX001 type ketones for the treatment of psoriasis AVX001 type ketone in a pharmaceutical composition	Multiple granted US patents	
PCT/EP2020/003384	AVX001 type ketones for the treatment of glomurelonephritis In some jurisdictions AVX001 ketones for the treatment of lupus nephritis and diabetic nephropathy	Europe, Europe (divisional), US, Australia, Canada Japan	
PCT/2010/064687	Oxothiatole compounds and their use for the treatment of certain chronic inflammatory disorders	Europe, the US, Australia, China (divisional), India, Japan, Canada, Rep of Korea (divisional), Hong Kong	
PCT/EP2014/051655	Oxothiazole compounds and their use in the treatment of chronic inflammatory disorders and proliferative disorders such as cancer	Europe, US, Autralia, China, India, Japan	Rep of Korea, Canada, China (divisional)
PCT/EP2015/067836	Oxothiazole compounds for the treatment of chrinic inflammatory disorders and proliferative disorders such as cancer	Europe, US, Australia, Japan	Canada, China, India, Rep of Korea, Hong Kong, US (continuation)
PCT/EP2015/061534	AVX001 type ketones for the treatment of skin cancer	Europe, United States, Australia	Canada, China, Republic of Korea
PCT/EP2017/056016	AVX235 and AVZ420 in combination with BEZ235	Australia	Europe, US, Canada, China, Japan, New Zealand, Rep of Korea, Hong Kong
PCT/EP2017/063627	AVX001 type ketones in combination with a calcineurin inhibitor	Australia	Europe, US, Canada, China, India, Israel, Japan, New Zealand, Rep of Korea, hong Kong
PCT/EP2017/073951	Formulation comprising AVX001 type ketones and silicone	Australia	Europe, US, China, Israel, New Zealand
PCT/EP2017/078169	Oxothiazole compounds in combination with secosteroid	Australia	Pending in Europe, US, Canada, China, Israel, New Zealand
PCT/EP2017/078162	Oxothiazole compounds in combination with corticosteroid	Australia	Europe, US, Canada, Chona, Israel, New Zealand
PCT/EP2019/060544	Oxothiazole compounds for the treatment of fibrotic diseases		US, China, Japan, Europe

FINANCIAL STATUS

FINANCIAL STATUS

In September 2020, Coegin Pharma completed the reverse takeover of GoldBlue, listed on the NGM Nordic SME marketplace.

Reverse take over

Through the reverse takeover, Coegin Pharma gained access to the stock market at significantly less cost and in much shorter time compared to a common IPO-process.

Coegin Pharma AB recently acquired the Norwegian biotech company Coegin Pharma AS. The transaction has been completed and the company is in the final phase of re-listing process with NGM. The acquired operations now constitute the group's main operations.

Funding

Historically, about SEK 200 million has been invested in the company of which half has been research grants from organisations like the **Research Council of Norway**.

Being qualified for research grants is also validation of the quality and prospect of the company's research.

In May 2020, the company raised SEK 20 million to start developing therapies in several cancer forms.

Stock options for management

Coegin Pharma has issued warrants to management and key personnel, with exercise between 1 October 2024 – 31 December 2024, subscription price has been set to SEK 0,263 per share. In total, 10 000 000 warrants of series 2020/2024 have been issued.

Financial calendar	Date
Year end report 2020	26 February 2021

BIOSTOCK'S COMMENTS

BIOSTOCK'S COMMENTS

Despite recent progress in cancer therapy, the need for new treatments in this large field is still urgent. Coegin Pharma is now developing a new approach to treat cancer by targeting the enzyme cPLA$_2$α. Professor Berit Johansen and her research team at NTNU in Norway discovered that the enzyme releases arachidonic acid, which in turn activates inflammatory and proliferate processes that are central mechanisms in several diseases.

Experienced management and new strategic focus

Since October, the company is listed on NGM Nordic SME, and with a management team and board with extensive experience from life science and venture capital in general and actinic keratosis specifically, the company is now ready to execute on its new strategy.

The company has developed two distinct chemical classes, and their drug candidates have proven mechanism of action in several preclinical studies. The compounds are well protected by patents valid in relevant countries and regions until the mid 2030s.

Building on Proof-of-Concept

Coegin Pharma achieved proof-of-concept with a cPLA$_2$α inhibitor in a phase I/II clinical trial in psoriasis. The company later chose not to explore that specific indication, as they identified other areas where their candidates potentially will have a bigger impact for patients together with greater commercial opportunities.

Actinic Keratosis and skin cancer

The primary focus in the near term, will be on actinic keratosis. For 2021, the company is planning for a phase I/II trial in actinic keratosis with a possible readout already in the beginning of 2022. According to corporate strategy, Coegin Pharma will start considering license deals or partnering opportunities in actinic keratosis, should the phase I/II trial outcome be beneficial.

Triple-negative breast cancer and leukaemia

In 2022 the company is aiming to file another CTA for their systemic cPLA$_2$α inhibitor in a cancer indication, TNBC and leukaemia are areas being investigated. These projects can potentially be spun off in the future, depending on the progress in the programs and other focus areas for the company.

Possible spin-out of the CKD-project

Finally, Coegin Pharma has also found support for their approach in chronic kidney disease and fibrosis. CKD is the result of many diseases, with as many as 700 million cases worldwide. This project can also potentially be spun off in the future.

Substantial commercial potential

Given the large unmet medical need in these large indications, also implies a substantial commercial potential. From an investor point of view, readout from the clinical phase I/II trial is potentially only a year away, which in life science investments is soon. Should Coegin Pharma be successful, partnering or license deals could be a reality in the near future. Recent deals show that there is a strong demand for new treatments, far exceeding Coegin Pharma's present market value.

Research validates the long-term value

Being a frontrunner in cPLA$_2$α-inhibitors, the technological platform developed by Coegin Pharma is not limited to the current pipeline projects. New cancer forms and inflammatory indications can be addressed if explored in the future, adding to the long-term value.

APPENDIX

REFERENCES

Grand View Research

Actinic Keratosis market estimate

https://www.grandviewresearch.com/industry-analysis/actinic-keratosis-ak-treatment-market

The Lancet

Global regional and national burden of chronic kidney disease 1990-2017

https://www.thelancet.com/article/S0140-6736(20)30045-3/fulltext

Markets and Markets

Leukaemia market estimate

https://www.marketsandmarkets.com/Market-Reports/chronic-lymphocytic-leukemia-223.html

National Institutes of Health

National Institute of Diabetes and Digestive and Kidney diseases

Diabetic Kidney Disease

https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/diabetic-kidney-disease

Persistent Market Research

Triple Negative Breast Cancer market estimate

https://www.researchgate.net/publication/338229854_Triple_Negative_Breast_Cancer_Treatment_Market_To_Be_At_Forefront_By_Approach

Verified Market Research

CKD drugs market size and forecast

https://www.verifiedmarketresearch.com/product/chronic-kidney-disease-drugs-market/

World Health Organisation

Cancers

https://gco.iarc.fr/today/data/factsheets/cancers/39-All-cancers-fact-sheet.pdf

Radiation: Ultraviolet (UV) radiation and skin cancer

https://www.who.int/news-room/q-a-detail/radiation-ultraviolet-(uv)-radiation-and-skin-cancer

DISCLAIMER

This analysis is a Status Report by BioStock, conducted on commission by the analysed company. BioStock's remuneration for the work has been agreed upon beforehand and is independent of the content and conclusions reached in the analysis. The content of this analysis is based solely on publicly available information gathered through research by the analyst from sources such as e.g. financial reports and statements, the company's web page, public presentations and in dialogue with representatives of the company's executive management. The information about the company was made available to the company for fact-checking and was published subsequent approval by the company. The analysis contains subjective assessments regarding future events and outcomes, which should be considered to render such assessments to be uncertain. Any valuation of the company, products and/or markets has been made by BioStock's analyst. The analyst does not own shares in the company. This analysis should not be considered as a recommendation or advice to invest in the company nor shall it be interpreted as financial advice of any sort. BioStock cannot and does not give any guarantees that the conclusions or forecasts presented in this analysis will be fulfilled. BioStock cannot be held responsible or liable for any damage, direct or indirect, caused by decisions made based on the information in this analysis. BioStock is not subject to the oversight of the Swedish financial authority Finansinspektionen and is thus not required to comply with the specific rules and guidelines that apply to analysis firms subject to the oversight of Finansinspektionen.

CONTACT

BioStock AB
Medicon Village
Scheeletorget 1
223 81 Lund
red@biostock.se