Medivir Capital Markets Day

March 26, 2015

MEDIVIR

A research-based pharmaceutical company focused on infectious diseases and oncology

Agenda

Medivir's platform & strategy for sustainable value creation

Discovery – extending our expertise into oncology

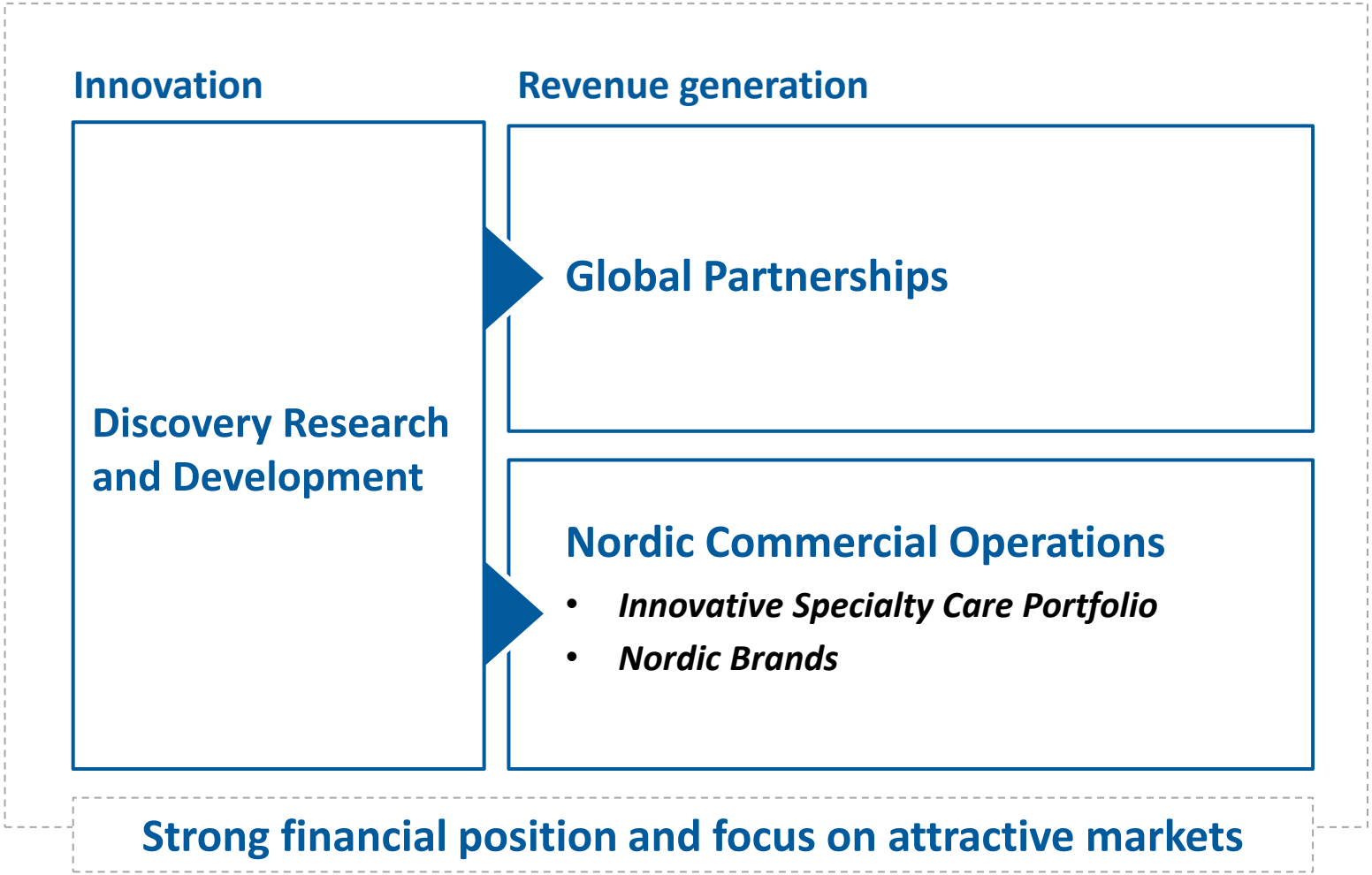
Development – optimizing value of our pipeline assets

Nordic Commercial – driving profitable growth

Conclusions

Q&A

Balanced platform of innovation and revenue generation



Medivir is in a much stronger position today than ever before

Global recognition "From bench to bedside"

- **Our innovative R&D capabilities:**
  Successful track-record in developing block-buster products
- **Our technology platform:**
  protease inhibitor design and nucleotide/nucleoside science

Ability to invest in innovation for sustainable value creation

- Strong financial position (~1 BSEK in cash following voluntary share redemption program) with more diversified shareholder position

Strong R&D infrastructure and competence

- Strengthened capabilities to allow projects to progress faster and further in the value chain (e.g. strong infrastructure including collaboration with CROs)

New Management team

- Proven track-record in drug development, closing value creating deals and ability to drive Nordic sales


Niklas Prager | Richard Bethell | Charlotte Edenius | Henrik Krook | Ola Burmark | Christine Lind

Continuous innovation through proprietary technology platform

Proven capabilities in protease inhibitor design and nucleotide/nucleoside science

Marketed

Xerclear® / Zoviduo®
Nucleoside analogue-based treatment for labial herpes

Development Pipeline

- MIV-711: protease inhibitor for osteoarthritis
- MIV-247: protease inhibitor for neuropathic pain
- MIV-802: nucleotide for HCV

Marketed

OLYSIO® (Simeprevir)
Protease inhibitor currently revolutionizing HCV therapy

Discovery Pipeline

- 3 projects within infectious disease (including RSV fusion protein inhibitor)
- 4 oncology projects

Strong R&D infrastructure and competence

Strengthened capabilities to allow projects to progress faster and further in the value chain

World-class in-house capabilities

65% of employees work in R&D

>70% within R&D have doctorates

+

Network of complementary external expertise and capacity

CRO
External collaborations
Academic linkages
KOLs

Securing agility, flexibility and efficiency in R&D

An attractive partner for in- and out-licensing

Successfully entered into over 20 global partnerships since inception

	Description
Johnson & Johnson / Janssen	• 6 different deals with J&J – in-licensing and out-licensing (Research to Phase II) • 3 different indications (HCV, HIV and Dengue)
gsk	• 3 separate deals completed with GSK • Covering Xerclear® / Zoviduo® and HIV (Phase I)
Roche	• 3 separate deals completed with Roche • Focus on HCV research
MEDA	• Divestment of Xerclear® / Zoviduo® US rights to Meda
ferrer	• In-licensing of Adasuve®

Additional DAEWOONG PHARMACEUTICAL CO.,LTD. · Boehringer Ingelheim · Bristol-Myers Squibb · CHIRON · Wyeth

Proven ability to monetize

Xerclear® / Zoviduo®
Nucleoside analogue-based treatment for labial herpes

gsk *EU*

MEDA *North America*

339 *MSEK*

OLYSIO® (Simeprevir)
Protease inhibitor currently revolutionizing HCV therapy

janssen

Worldwide rights and strong continuing commitment

2 340 *MSEK*

Additional R&D partnerships

Roche · DAEWOONG PHARMACEUTICAL CO.,LTD. · Boehringer Ingelheim · Bristol-Myers Squibb · CHIRON

122 *MSEK*

Strong track-record in developing and selling drugs – *bench to bedside*

~2.8 *BSEK*

Total Value
Last 10 years

Consistent revenue generation and direct market access

Strong commercial presence in the Nordics with proven ability to launch and market specialty care products

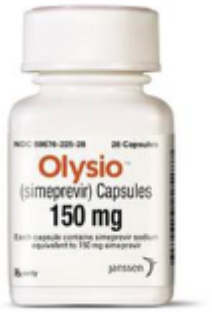
186 MSEK

OLYSIO® and Adasuve® launched in 2014

Specialty Care

Nordics, Year 2014

adasuve (loxapine) inhalation powder



180 MSEK

14 mature brands providing economies of scale for specialty care portfolio*

Nordic Brands

Nordics, Year 2014

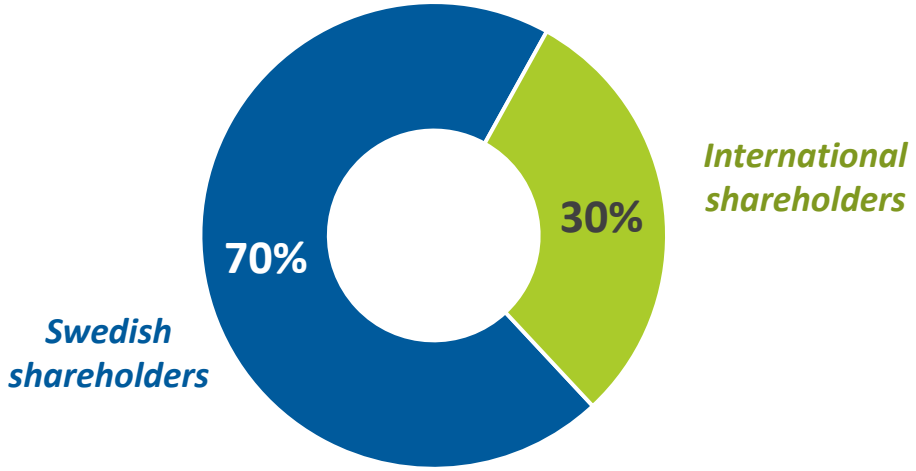
Close operational synergies especially in the areas of Regulatory Affairs, Pharmacovigilance, Supply & Logistics, and Quality

Ability to invest in innovation for sustainable value creation

Strong financial position to invest in innovative projects and develop them faster and further *- Turn projects into products*

Strong position with ~1 BSEK in cash available after 0.6B SEK share redemption

More diversified shareholder base enabling strategy implementation



Focus on attractive markets: Infectious Diseases

Attractive disease areas with large patient populations and high unmet medical needs

HCV	HIV	RSV	Anti-bacterials
• 130–150 million people infected globally[1] • High focus area for development from pharma companies • Rapidly increasing treatment levels but increased competition and price pressure	• 35 Million people infected globally[1] • Large untreated patient populations • High focus area for development from pharma companies	• Major cause of lower respiratory tract infections and hospital visits • No treatment currently available	• Global spread of multi drug resistant, Gram negative bacteria

Medivir Value Proposition

- **Strong track record in the infectious disease area with multiple partnerships in HCV and HIV**
- **Successful development of block-buster drug and continued collaboration with Janssen that is a committed leader in the HCV field**
- **Leading-edge technology platform that is highly relevant in both viral and bacterial infections**

[1] WHO – Year 2014

Focus on attractive markets: Oncology

Entering into oncology given attractive market dynamics & relevance of technology platform

Liver

- 2nd leading cause of cancer related death world-wide
- One of the fastest growing cancers in US (incidence & mortality)
- Hepatocellular carcinoma is the predominant form of liver cancer

Pancreatic

- Low overall survival and very limited effect of current treatments

Other Targeted

- Protease technology platform with potential application in **haematopoietic and lymphoid malignancies, and glioblastoma**

Medivir Value Proposition

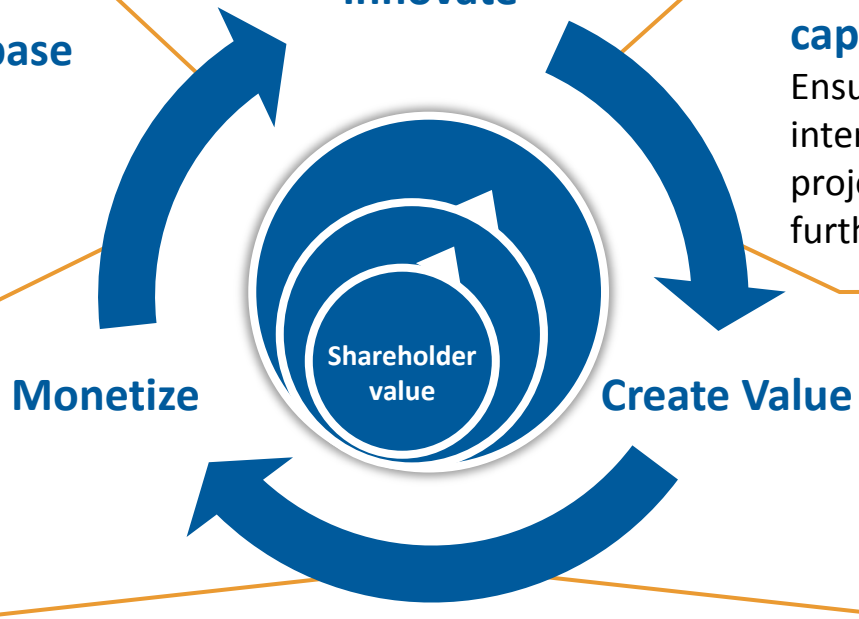
- **Many opportunities to use our nucleoside/nucleotide and protease inhibitor expertise to deliver high-value projects in areas of clear unmet need**
- **Discovery and Development organizations have been strengthened in the last 12 months to support our future efforts in this area**

Medivir has the platform for sustainable value creation

- **R&D capabilities and financial resources to continue to innovate** within our focus areas infectious disease and oncology
- **End-to-end ability to drive multiple projects in parallel** from discovery through clinical proof of concept
- **Attractive partner** for in- and out-licensing
- Proven **ability to monetize** (projects into partnerships)
- **Commercial strength in the Nordics** to launch and market specialty care products
- **More diversified shareholder base** as success has increased interest from international investors

Sustainable value creation

Invest capital responsibly and attract diversified shareholder base
Reinvest in continuous innovation and operate efficiently



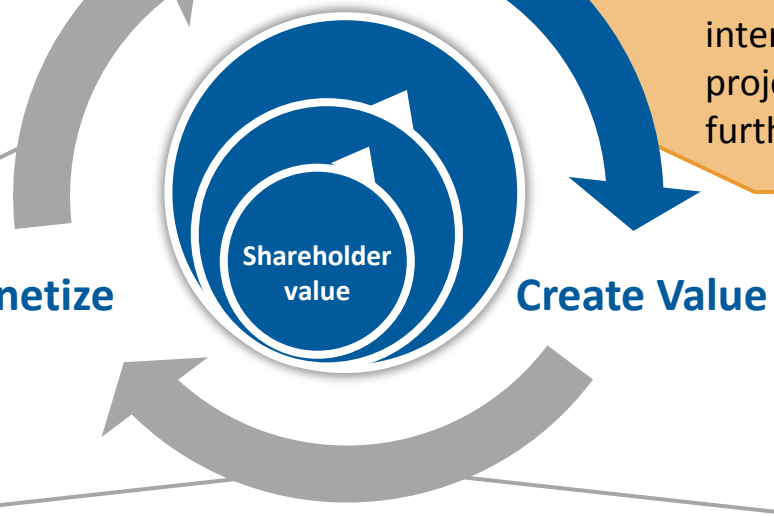
Strengthen the R&D pipeline and capture more of its value
Ensure a continuous flow of external and internal innovation and value creating projects and advance selected projects further (e.g. Phase II)

Capitalize on commercial platform in the Nordics
Further expand Innovative Specialty Care Portfolio and increase commercial focus

Generate diversified revenue from global partnerships
Out-license projects from the R&D pipeline on a consistent basis

Creating value by strengthening our R&D pipeline

Invest capital responsibly and attract diversified shareholder base
Reinvest in continuous innovation and operate efficiently



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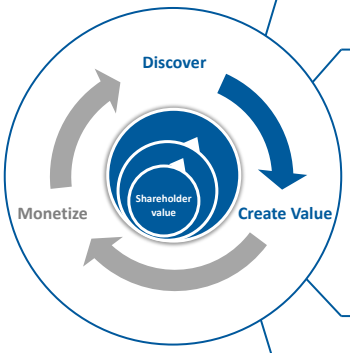
Four part strategy to strengthen the R&D pipeline and capture more of its value

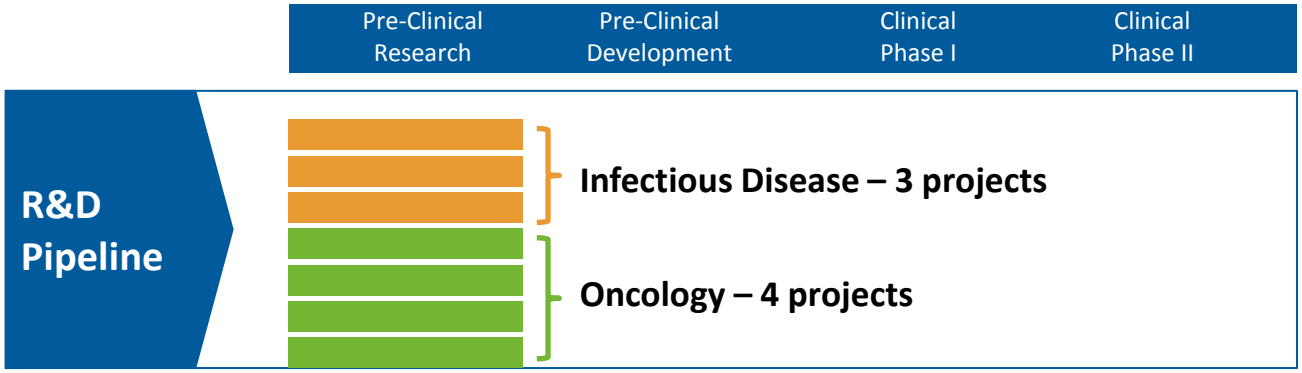


1. Advance proprietary discovery projects
2. Broaden and diversify pipeline from external sources
3. Optimize value creation for out-licensing
4. Progress out-licensed projects

Advance proprietary discovery projects

Discovery pipeline

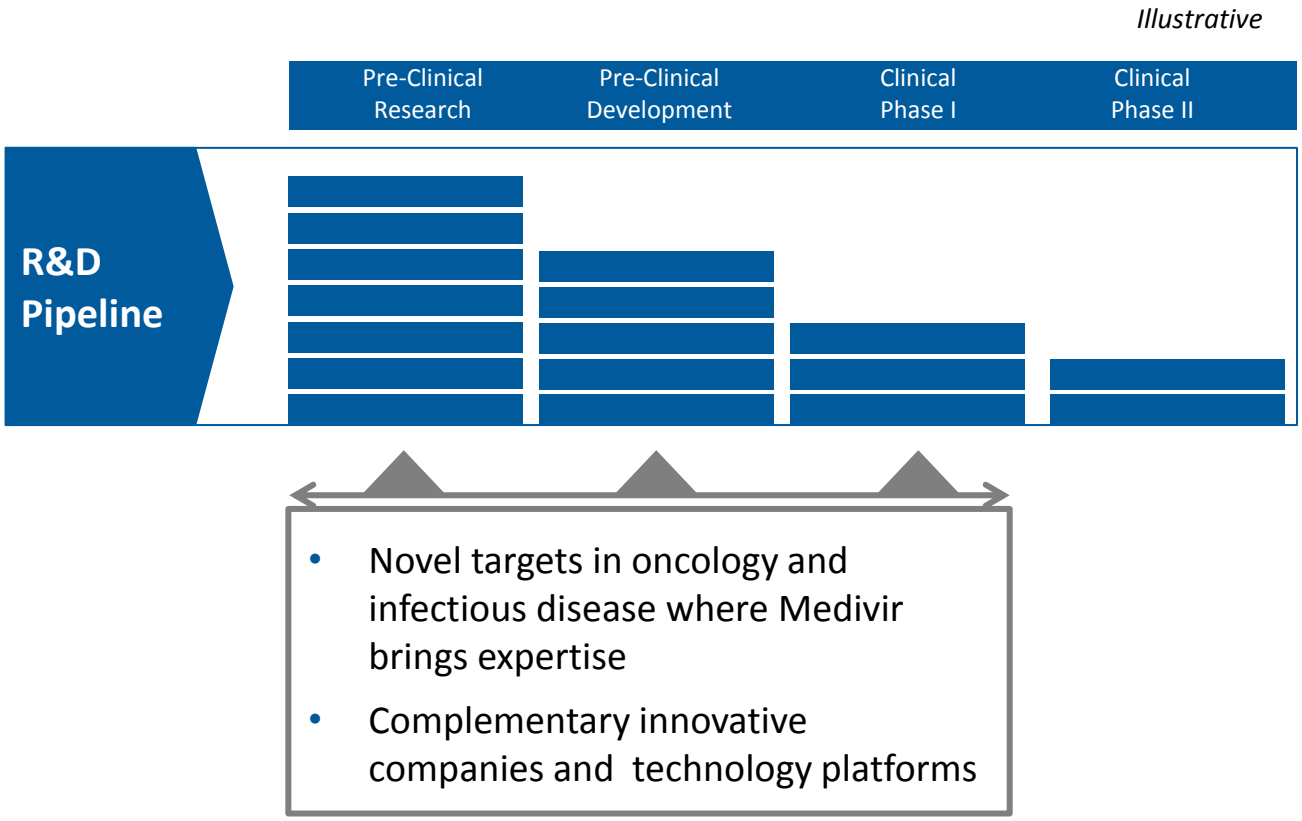
Illustrative



- **Extend value creating potential of our leading scientific platform to new projects within infectious disease and oncology**
- **Broad pipeline of proprietary discovery assets in place today**
- **Key levers for sustainable value creation**
  - Leverage experience and assets from previous projects
  - Run multiple projects in parallel to feed development portfolio
  - Out-source when relevant to secure flexibility, speed and quality

External sources will complement in-house development

Broaden and diversify the pipeline from external sources



Description

- **Employ both traditional and creative deal-structures to ensure access to most promising targets, companies and technology platforms**
  - In-licensing
  - Acquisitions
  - Partnerships / Collaborations (incl. joint development, funding of research)
- **Flexible structures and high organizational attention**
- **Creative but disciplined investment**
- **Transformative transactions**

Innovative projects with potential for significant value creation

Project	Pre-clinical Res.	Pre-clinical Dev.	Clinical Ph. I	Clinical Ph. II
Osteoarthritis MIV-711 Cathepsin K inhibitor				
Neuropathic pain MIV-247 Cathepsin S inhibitor				
HCV infection MIV-802 HCV nucleotide NS5B polymerase inhibitor				
RSV RSV fusion protein inhibitor				

Market potential overview

- 250 million people worldwide estimated to suffer from knee OA in 2012
- Unmet needs in suspending disease progression & relieving pain
- › ***Every 10% of the target population on the US market alone represents a potential of 600 MUSD* in annual sales***

- Affects ~30 M people in the 7 major markets
- Overall sales in NP market 2012: 6bn USD
- ***An effective, novel treatment with less side-effects and rapid onset will have a market opportunity of > 1bn USD in annual sales***

- Nucleotides are the cornerstone of most effective drug combinations
- ***Large potential for nucleotides overall but actual potential for Medivir's nucleotide is dependent on future competitive landscape***

- Major cause of lower respiratory tract infections and hospital visits
- › ***Market potential is estimated to be 500 MUSD in annual sales*** *(based on health-care utilization by young children and elderly patients infected by RSV)*

Continue development and out-license at most value creating point in development (Pre-clinical → post phase IIa)

* 10% market share represents 200,000 patients multiplied by an annual treatment cost of 3,000 USD/Year

Progress out-licensed projects

HCV nucleotide
Pre-clinical Development

HIV protease inhibitor
Pre-clinical Research

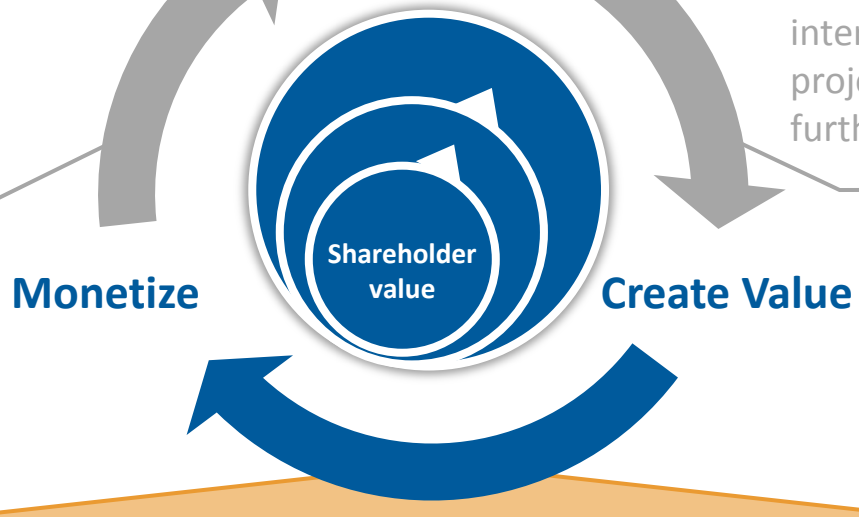
- Close engagement with partners in all development phases
- Successful development will lead to additional milestones and royalties

Generating revenue from global partnerships and Nordic sales

Invest capital responsibly and attract diversified shareholder base
Reinvest in continuous innovation and operate efficiently

Innovate

Strengthen the R&D pipeline and capture more of its value
Ensure a continuous flow of external and internal innovative and value creating projects and advance selected projects further (e.g. Phase II)



Capitalize on commercial platform in the Nordics
Further expand Innovative Specialty Care Portfolio and increase commercial focus

Generate diversified revenue from global partnerships
Out-license projects from the R&D pipeline on a consistent basis

Preferred partner for in- and out-licensing

Track-record in securing and managing strong global partnerships
(J&J/Janssen, GSK, Meda, Roche, Boehringer Ingelheim, Chiron, Bristol-Myers Squibb, Ferrer, Daewoong)

Proven ability to generate significant milestone and royalty revenue streams

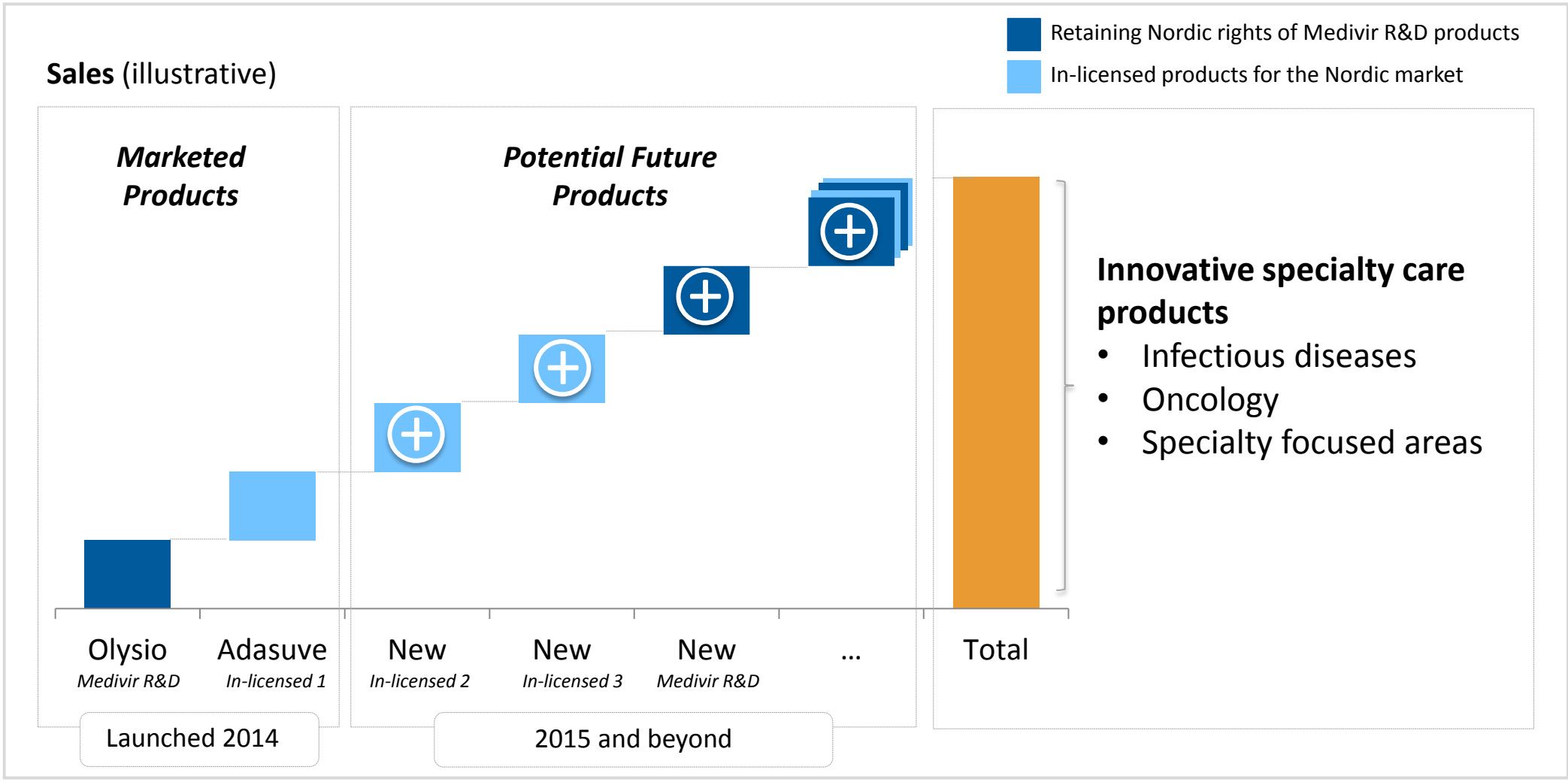
Partner of choice for in- & out-licensing

Scientific leadership and cutting edge research

Real-life understanding of patient and prescriber needs through our Nordic commercial operations

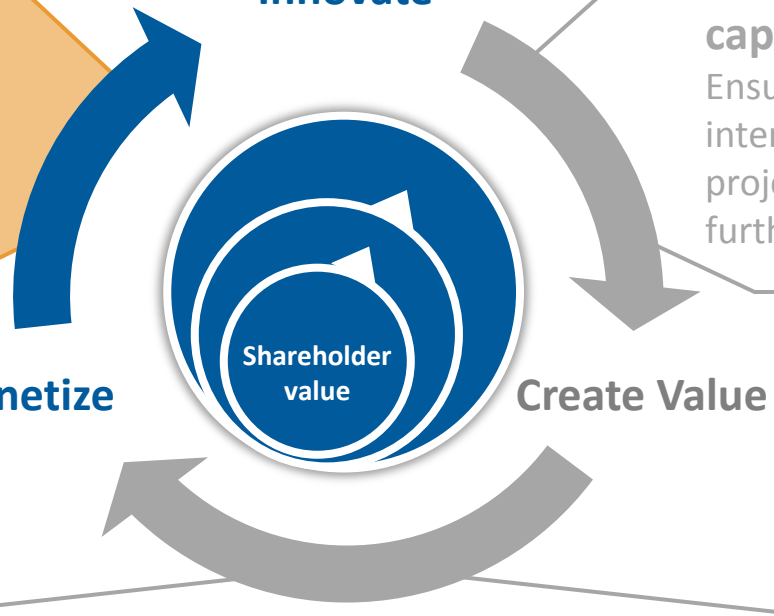
Addition of new innovative specialty care pharmaceuticals

Innovative Specialty Care Portfolio



Ensure maximum leverage from available resources

Invest capital responsibly and attract diversified shareholder base
Reinvest in continuous innovation and operate efficiently



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Reinvest in continuous innovation and secure efficient operations

	Strategic transactions *creating longer-term independent growth opportunities*	Operational efficiency *ensuring prudent use of our cash*
R&D *Focus on infectious disease and oncology*	• Bolster pipeline by adding novel assets and complementary technology platform(s) 	• Harness in-house development expertise and ensure access to external expertise • Out-source when relevant to secure flexibility, speed and quality • Run multiple projects and development steps in parallel
Nordic Commercial Operations	• In-licensing / acquiring products to our specialty care portfolio 	• Leverage market insights in development and in discussions with partners • Capture synergies between Nordic Brands and Innovative Specialty Care portfolio

Success will attract further attention from new investors recognizing value of innovation

US investors an important stakeholder in health care / biotech

Large quantity of Health care focused investors and dedicated capital

- Over 1,350 actively managed funds invest in healthcare
- ~250 BUSD currently invested in biotechnology in the **US**
- ~67 BUSD currently invested in biotechnology in the entire **EU**

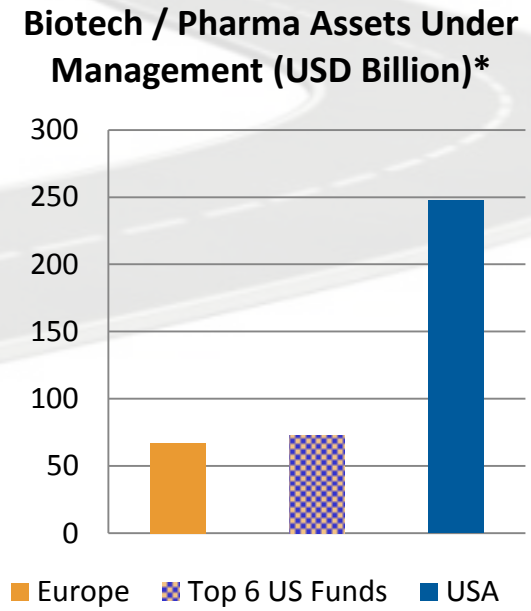
Investment by "smart" US funds validates companies to the rest of the world

When invested, investors drive other fund managers to their ideas

- Managers feel validated when others invest along with them, therefore some US managers can be your best advocate

Due to sophistication and knowledge of the space investors also drive business development

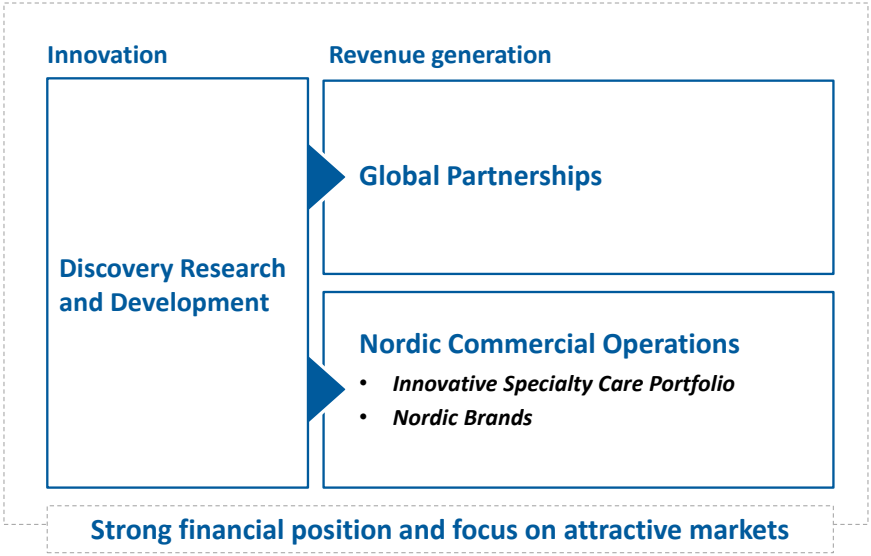
- Drive partnering and acquisition opportunities
- Make introductions to other portfolio companies



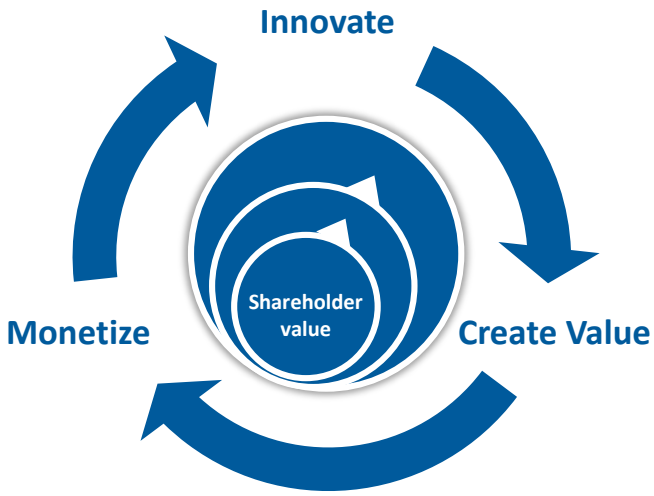
Medivir has already had some success in the US with limited exposure

To summarize, Medivir is in a strong position to continue to discover, develop and capitalize on investments in innovation

Medivir has the platform for sustainable value creation…



…and will utilize proven track-record to further build shareholder value



Take advantage of Medivir's history of bringing valuable drugs from bench to bedside

Agenda

Medivir's platform & strategy for sustainable value creation

Discovery – extending our expertise into oncology

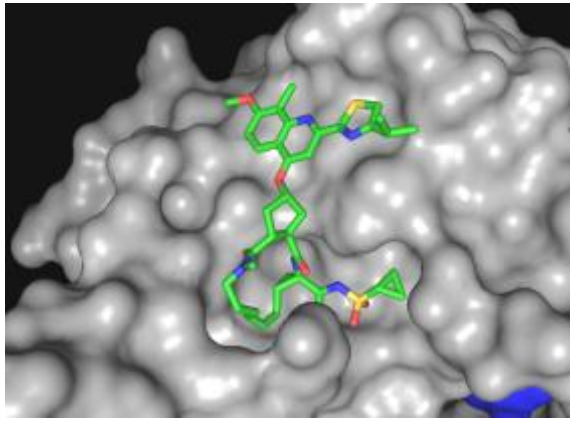
Development – optimizing value of our pipeline assets

Nordic Commercial – driving profitable growth

Conclusions

Q&A

Leading scientific platform in nucleosides/tides and protease inhibitors

	Description
Nucleosides and nucleotides	**Extensive expertise in the design, synthesis and biological characterization of novel nucleosides and nucleotides** • Most recent example: MIV-802, a novel nucleotide inhibitor of HCV replication • Idea to CD in 18 months • Abstract on the preclinical profile of this molecule accepted for poster presentation at EASL (Vienna, April 2015)
Protease inhibitors	**Discovery and development of novel protease inhibitors** • Combining structural biology, medicinal chemistry and biology to generate potent and selective inhibitors with drug-like properties • Olysio the most conspicuous example of our past success in this area • MIV-711 (Cathepsin K) and MIV-247 (Cathepsin S) represent two further recent examples of high quality protease inhibitors discovered by Medivir scientists 

Extending the value creating platform to new projects in infectious disease and oncology

	Infectious disease	Oncology
Overview	• Company focus on antiviral drugs since founding • 30 years of antiviral drug discovery has resulted in an enormous improvement in the management and, in the case of HCV, cure of chronic viral diseases • Continue to exploit our internal expertise in antiviral drug discovery	• Extensive focus going forwards on oncology • Many opportunities to use our nucleoside/nucleotide and protease inhibitor expertise to deliver high-value projects in areas of clear unmet need • Strengthened Discovery and Development organizations to support our future efforts
Focus Areas	**RSV fusion inhibitor** • Aim is a molecule that can be used to treat serious RSV infections, which occur primarily in young children and the elderly **Other early stage (2 projects)** • Both focused on diseases caused by drug-resistant bacteria • Protease conferring drug resistance in many Gram negative pathogens • New class of antibacterial agents (collaboration with a leading Swedish university)	**Limited resource requires disease as well as target focus:** • Focus on diseases of significant unmet need *Facilitates derisked clinical programs* • Build on opportunities that present from current projects or in-licensing opportunities **Hepatocellular carcinoma** • Significant unmet medical need - potential for impact of new therapies • Apply knowledge from HCV & HBV nucleoside/tide projects **Examples of other opportunities:** • Pancreatic cancer • Glioblastoma • Haematological Cancers

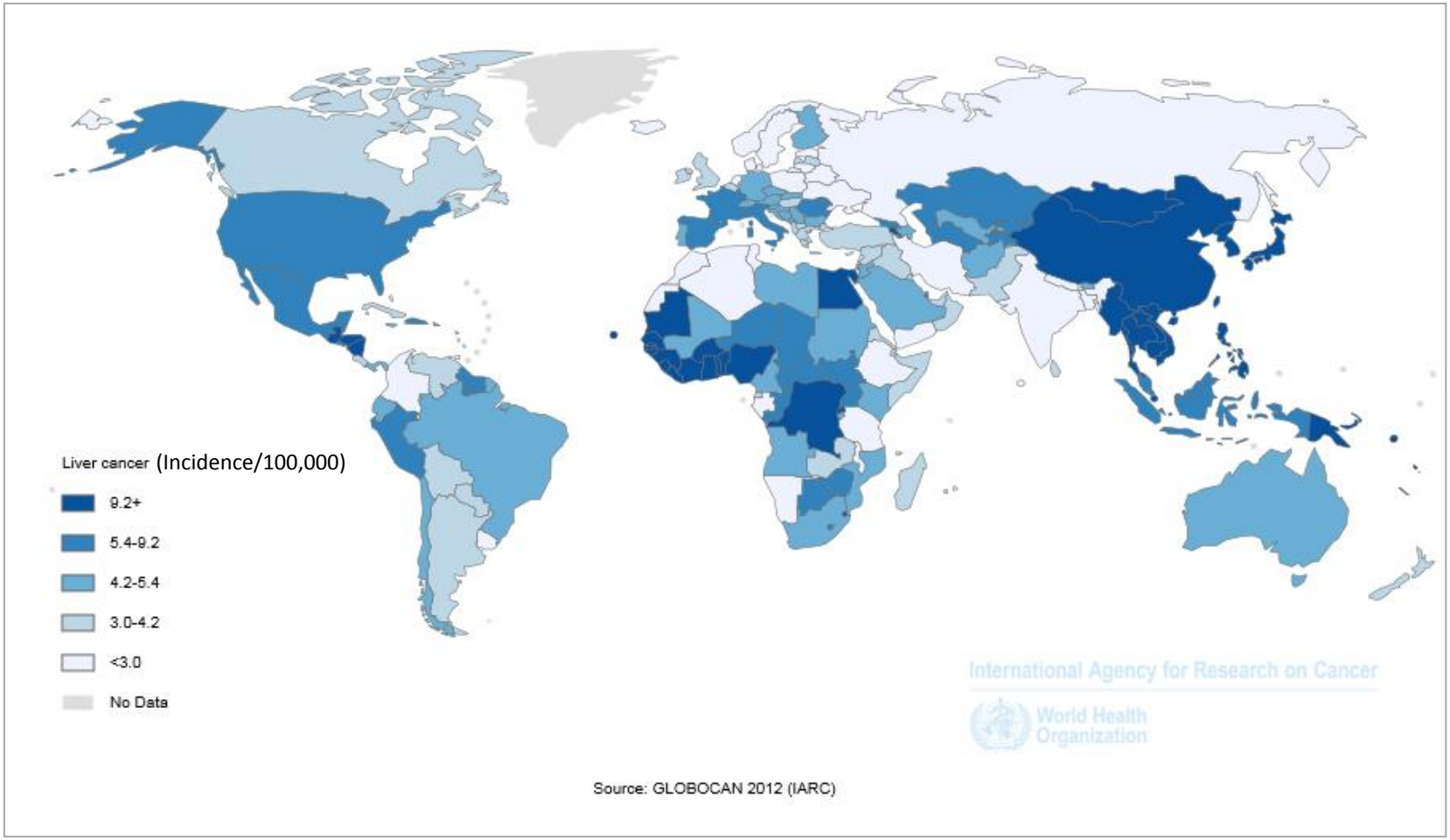
Liver cancer is a major market opportunity

Epidemiology

- 2nd leading cause of cancer-related death world-wide
- One of the fastest growing cancers in US (incidence & mortality)
- Hepatocellular carcinoma is the predominant form of liver cancer

Etiological factors

- NASH, obesity, diabetes
- Chronic viral hepatitis
- Environmental factors, including food related xenobiotic toxins
- Alcohol, tobacco/smoking



globocan.iarc.fr/

Howlader et al. (eds). SEER Cancer Statistics Review, 1975-2011, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2011/

Liver targeting is a key strength of the scientific platform

Current standards of care in hepatocellular carcinoma all involve liver targeting…

Systemically administered chemotherapeutic agents typically have low liver access

- Systemic toxicity typically precedes efficacy on HCC – many trial failures
- No good alternative as neoadjuvant to curative treatment

Topographic invasive methods only proven way to hit therapeutic window

- Transarterial administration of doxorubicin, oxaliplatin or radiation scaffolds in presence or absence of concomitant embolisation
- Costly and risky as well as tech demanding
- Limited by AV-shunt, portal vein tumor thrombosis, arteritis reaction, tumor burden etc
- Not suitable as neoadjuvant to curative treatment

Sorafenib an oral tyrosine kinase inhibitor with proven efficacy in HCC

- Primarily hepatic pharmacokinetics, with oral BD dosing and 77% overall and 51% parent eliminated in bile
- Potentially, this “passive” liver targeting add to the success in this indication

…and liver targeting has a strong link to Medivir’s scientific platform

- Experience in liver-targeted prodrugs of nucleosides and nucleotides from our HCV drug discovery programs
  - MIV-802 the most recent example
- Several variations on this approach employing different nucleoside/tides currently in early stage evaluation for HCC

Liver-targeting prodrugs for HCC

Why use nucleosides to treat hepatocellular carcinoma?

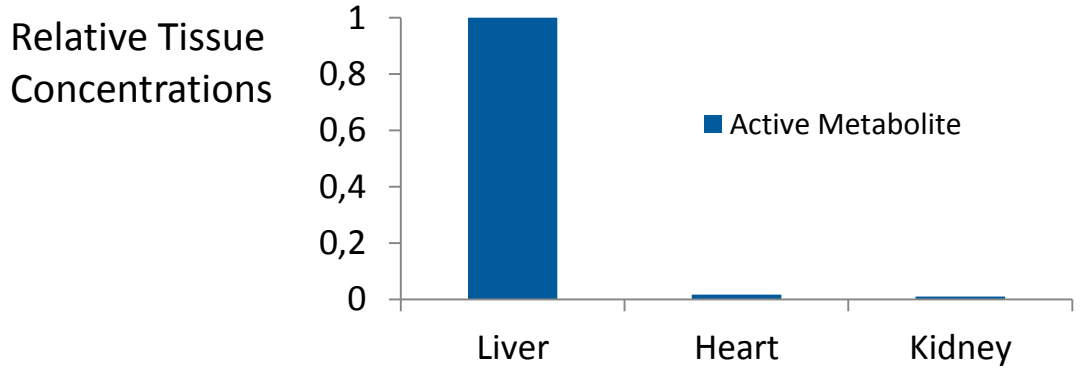
HCC represents a good area of focus for nucleoside/tide approaches

- **Multiple mutations in HCC, i.e. no clear single oncogenic drivers**
- **Nucleoside/tides expected to be more successful than molecular targeted agents**

Why use a liver-targeting prodrug to treat hepatocellular carcinoma?

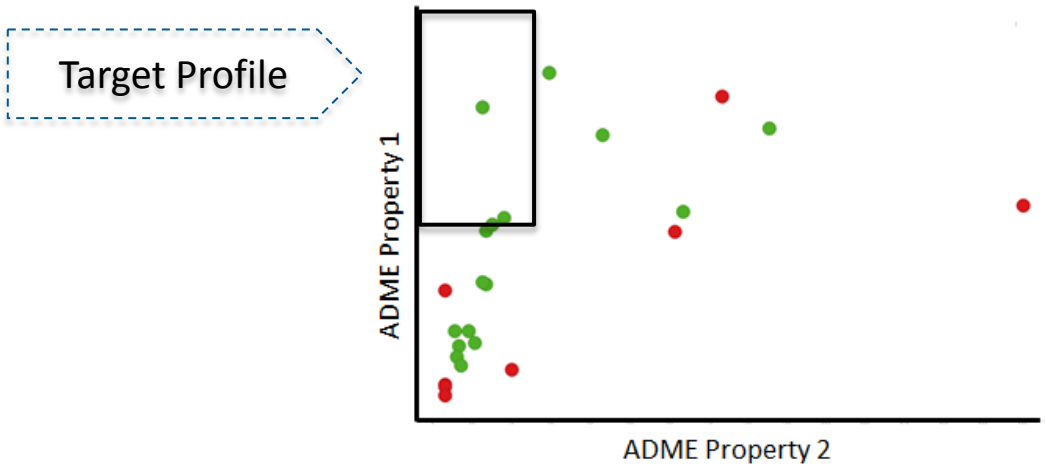
Selective delivery of very high levels of the active metabolite to the liver

- **Minimize exposures elsewhere**



Nucleoside/tide project with potential for liver cancer treatment

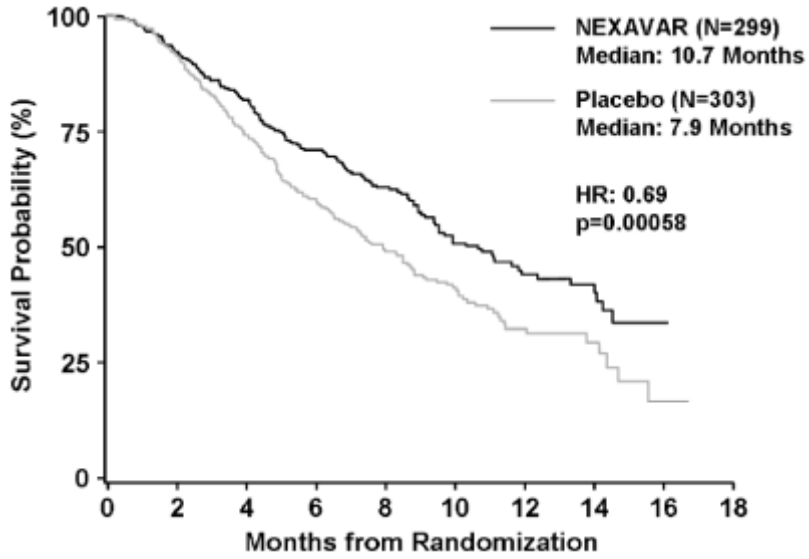
Drug concept: Liver-targeting pill aimed at	Most advanced project has identified prodrugs with:
• Improving outcomes in advanced HCC • Circumventing need for complex surgery in less advanced patients	• Improved intracellular concentrations of active metabolite compared with parent drug in liver cancer cell lines • Substantially improved activity compared with parent drug against liver cancer cell lines • in vitro absorption, distribution, metabolism and excretion (ADME) studies that support potential for liver targeting • First pharmacokinetic studies will start early 2Q 2015



Key unmet medical needs in hepatocellular carcinoma

Better maintenance in advanced stage

- 2nd-line to Sorafenib failure
- Combination with, or standalone vs., Sorafenib
- Ideally not as dependent on degree of liver decompensation



Better alternative to transarterial chemo-embolization (TACE)

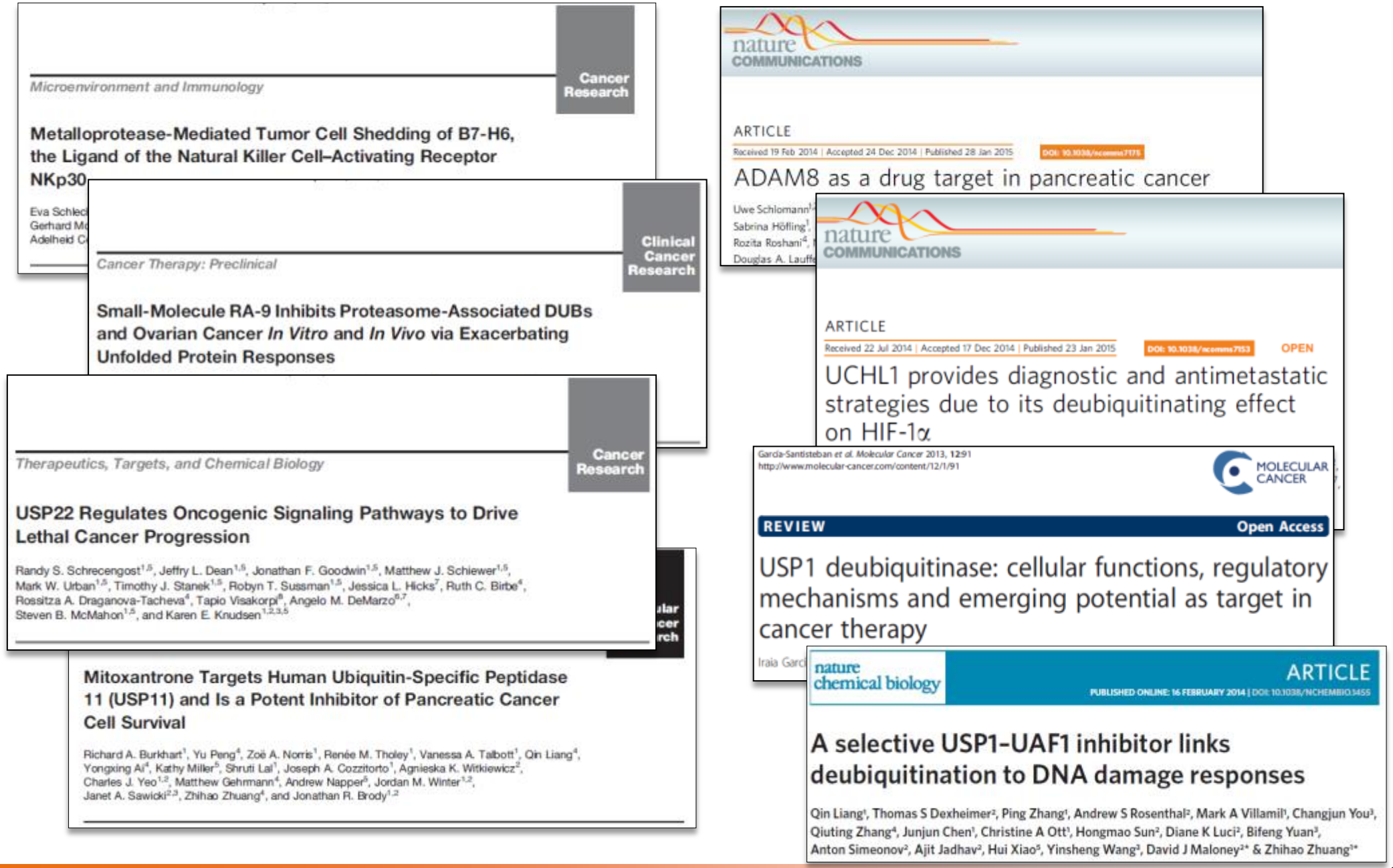
- Not invasive, nor as technically demanding
- Not limited by AV-shunt, portal vein tumor thrombosis, arteritis reaction etc.

First efficacious neoadjuvant to curative treatment

- Untapped potential in improving curative treatment
- Further opportunity for maintenance therapy for patients on waiting-list for transplantation

http://www.accessdata.fda.gov/drugsatfda_docs/label/2013/021923s016lbl.pdf

Proteases are an emerging target class for cancer treatment



Microenvironment and Immunology

Cancer Research

Metalloprotease-Mediated Tumor Cell Shedding of B7-H6, the Ligand of the Natural Killer Cell–Activating Receptor NKp30

Cancer Therapy: Preclinical

Clinical Cancer Research

Small-Molecule RA-9 Inhibits Proteasome-Associated DUBs and Ovarian Cancer *In Vitro* and *In Vivo* via Exacerbating Unfolded Protein Responses

Therapeutics, Targets, and Chemical Biology

Cancer Research

USP22 Regulates Oncogenic Signaling Pathways to Drive Lethal Cancer Progression

Randy S. Schrecengost[1,5], Jeffry L. Dean[1,5], Jonathan F. Goodwin[1,5], Matthew J. Schiewer[1,5], Mark W. Urban[1,5], Timothy J. Stanek[1,5], Robyn T. Sussman[1,5], Jessica L. Hicks[7], Ruth C. Birbe[4], Rossitza A. Draganova-Tacheva[4], Tapio Visakorpi[8], Angelo M. DeMarzo[6,7], Steven B. McMahon[1,5], and Karen E. Knudsen[1,2,3,5]

Mitoxantrone Targets Human Ubiquitin-Specific Peptidase 11 (USP11) and Is a Potent Inhibitor of Pancreatic Cancer Cell Survival

Richard A. Burkhart[1], Yu Peng[4], Zoë A. Norris[1], Renée M. Tholey[1], Vanessa A. Talbott[1], Qin Liang[4], Yongxing Ai[4], Kathy Miller[5], Shruti Lal[1], Joseph A. Cozzitorto[1], Agnieska K. Witkiewicz[2], Charles J. Yeo[1,2], Matthew Gehrmann[4], Andrew Napper[5], Jordan M. Winter[1,2], Janet A. Sawicki[2,3], Zhihao Zhuang[4], and Jonathan R. Brody[1,2]

nature COMMUNICATIONS

ARTICLE

Received 19 Feb 2014 | Accepted 24 Dec 2014 | Published 28 Jan 2015

ADAM8 as a drug target in pancreatic cancer

Uwe Schlomann[1], Sabrina Höfling[1], Rozita Roshani[4], Douglas A. Lauffe

nature COMMUNICATIONS

ARTICLE

Received 22 Jul 2014 | Accepted 17 Dec 2014 | Published 23 Jan 2015

OPEN

UCHL1 provides diagnostic and antimetastatic strategies due to its deubiquitinating effect on HIF-1α

Garcia-Santisteban *et al. Molecular Cancer* 2013, **12**:91
http://www.molecular-cancer.com/content/12/1/91

MOLECULAR CANCER

REVIEW

Open Access

USP1 deubiquitinase: cellular functions, regulatory mechanisms and emerging potential as target in cancer therapy

Iraia Garci

nature chemical biology

ARTICLE

PUBLISHED ONLINE: 16 FEBRUARY 2014 | DOI: 10.1038/NCHEMBIO.1455

A selective USP1–UAF1 inhibitor links deubiquitination to DNA damage responses

Qin Liang[1], Thomas S Dexheimer[2], Ping Zhang[1], Andrew S Rosenthal[2], Mark A Villamil[1], Changjun You[3], Qiuting Zhang[4], Junjun Chen[1], Christine A Ott[1], Hongmao Sun[2], Diane K Luci[2], Bifeng Yuan[3], Anton Simeonov[2], Ajit Jadhav[2], Hui Xiao[2], Yinsheng Wang[3], David J Maloney[2]* & Zhihao Zhuang[1]*

Proteases are an emerging target class for cancer treatment

MEDIVIR

Protease target selection

We work on proteases that:

- Represent a good fit with our technology platform
- Have a strong association with one or more cancer indications
- Offer a well-defined opportunity to improve patient outcomes through a targeted approach

Projects

Two protease inhibitor projects currently in our early project portfolio

Focus area

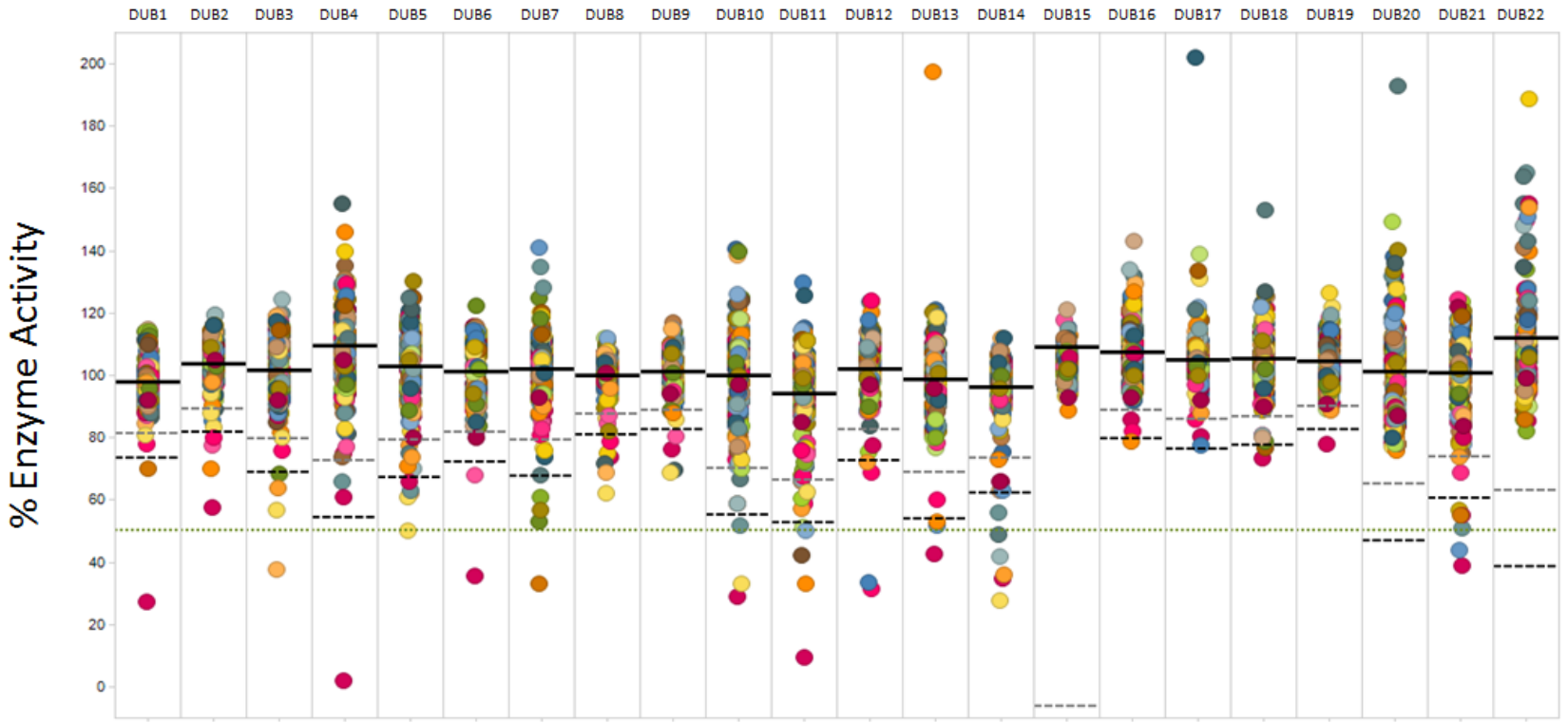
Proteases involved in the regulation of protein ubiquitylation represent a particularly interesting emerging class of targets

- Deubiquitinases (DUBs)
- Potential application to haematopoietic and lymphoid malignancies, and glioblastoma
- Opportunity to exploit chemical & biological expertise across multiple targets, c.f. kinase inhibitors

Deubiquitinases: Multiple shots on goal

Applying our expertise and assets to advance discovery of inhibitors of deubiquitinases

- 260 compounds – part designed, part available from our compound library
- Screened in parallel against 30+ deubiquitinases
- Hits identified for many DUBs, providing multiple opportunities for new projects



To summarize, we will continue to invest in infectious diseases and evolve towards oncology

Extend value creating potential of our leading scientific platform to new projects

Infectious Diseases	• **Continuing to invest in infectious disease, building on internal capabilities in this area**
Oncology	• **Evolution towards our future focus oncology is progressing well** – Key hires made in Biology and Clinical Research – Exciting portfolio of early projects – Ongoing discussions concerning attractive and platform-relevant projects to advance our portfolio

Agenda

Medivir's platform & strategy for sustainable value creation

Discovery – extending our expertise into oncology

Development – optimizing value of our pipeline assets

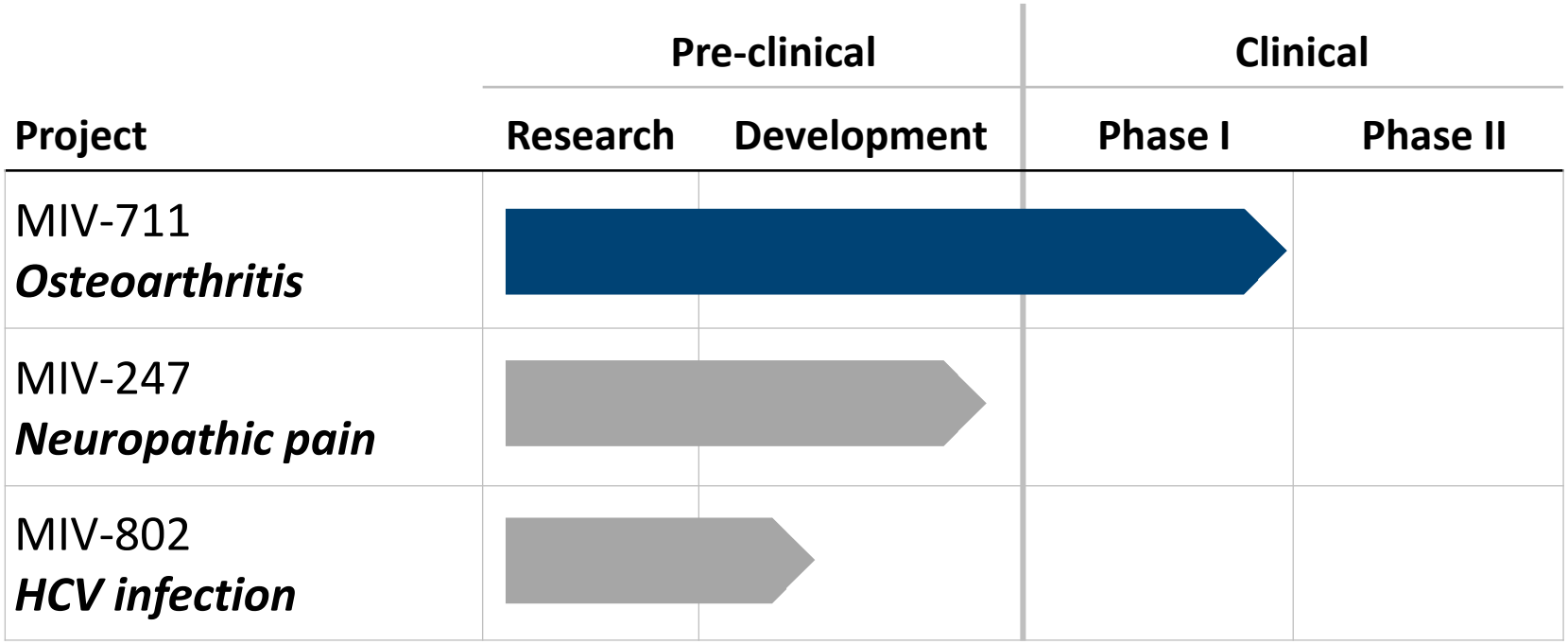
Nordic Commercial – driving profitable growth

Conclusions

Q&A

Optimize value creation in development projects to generate diversified revenue from global partnerships

Continue development and out-license at most value creating point in development, preferably at clinical Proof of Concept



Osteoarthritis (OA): a leading cause of chronic disability

Overview

- **Progressive disorder** characterized by **joint degeneration, pain and loss of function**
- **Most prevalent joint disease** with up to 40% over 65 suffering from knee or hip OA
- **Current treatments are insufficient** focusing on symptom relief e.g. physiotherapeutic exercise, intra-articular corticosteroids or hyaluronic acid and analgesics/anti-inflammatory agents (NSAIDs) in connection with life-style changes
- **No effective and safe disease modifying osteoarthritic drugs** (DMOADs) are available

Key unmet needs

Suspend disease progression and relieve pain

- Prevent degradation of subchondral bone, recently recognized as a key target for OA, and cartilage
- Prevent the pain associated with the disease

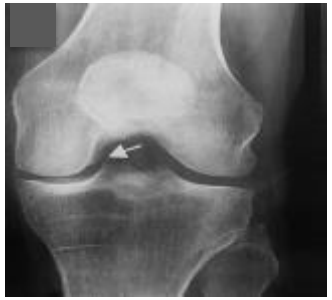
A disease-modifying OA drug (DMOAD) meeting these unmet needs has great market potential based on large and growing patient population

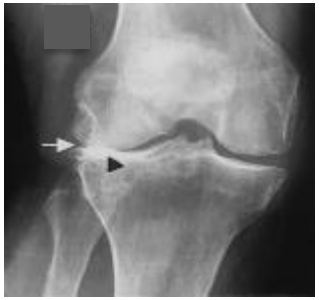
Sources: Hunter et al, Nat Rev Rheumatol, 2014; Reginster et al, Ann Rheum Dis 2013

Osteoarthritis (OA): a progressive degenerative disorder of the whole joint

- **Excessive cartilage degradation *and* bone resorption** are key features of osteoarthritis

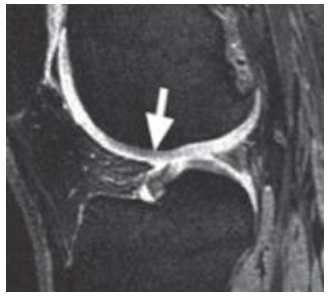
- **Classification of disease severity and progress** has been based on
  - monitoring of **symptoms** and
  - an **insensitive 2D X-ray** methodology (Kellgren-Lawrence-KL, 0-4 scale for joint space width (JSW) and bone deformity)

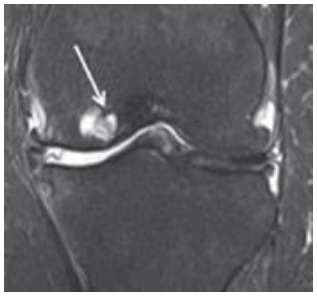




- **Cathepsin K Inhibition is expected to have joint protective effects in human OA**
  - expressed in osteoclasts and chondrocytes and degrades *both* bone and cartilage collagen
  - bone-acting agents have demonstrated beneficial effects on human OA disease progression, pain and function (e.g. SEKOIA study on strontium ranelate)

- **Improved imaging technologies will shorten PoC studies**
  - **3D MRI superior to 2D x-ray** in measuring progression as continuous variable on both bone and cartilage - **increased sensitivity**





Refs: Reginster JY et al: BMJ 2012, Shah D et al: Med J DY Patil Univ 2014;7:160

MIV-711: a potent, selective, once daily cathepsin K inhibitor for OA

Pre-Clinical

Pre-clinical data with MIV-711 in OA disease models:

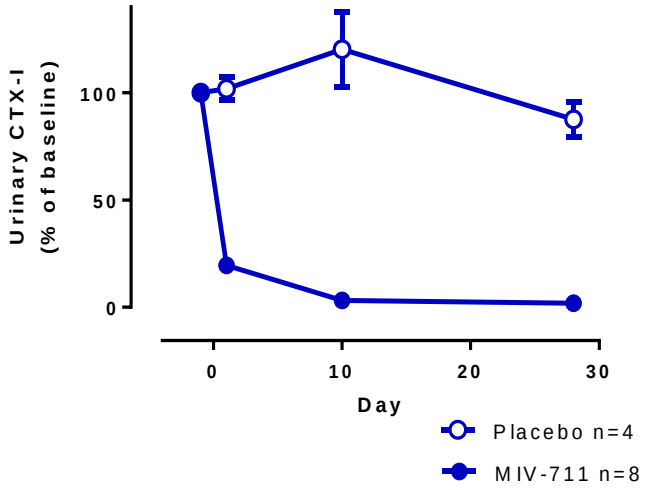
- Demonstrated **joint protective effects on both bone and cartilage** in preclinical OA models
  - improved subchondral bone integrity
  - attenuated cartilage degradation
- Paralleled by r**educed biomarkers** of cartilage degradation and bone resorption (up to 85%)

Clinical – Phase I

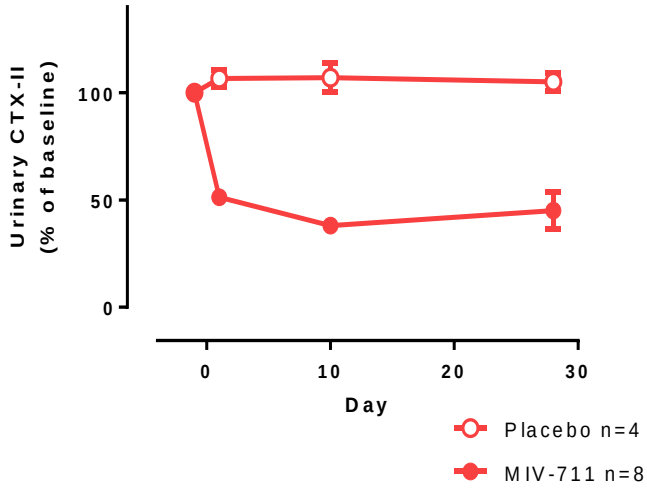
Clinical Phase I data:

- Generally safe and well tolerated up to 28 days
- Similar **dose-dependent decrease in biomarkers of** cartilage degradation and bone resorption in postmenopausal women (100mg qd):

Bone resorption biomarker

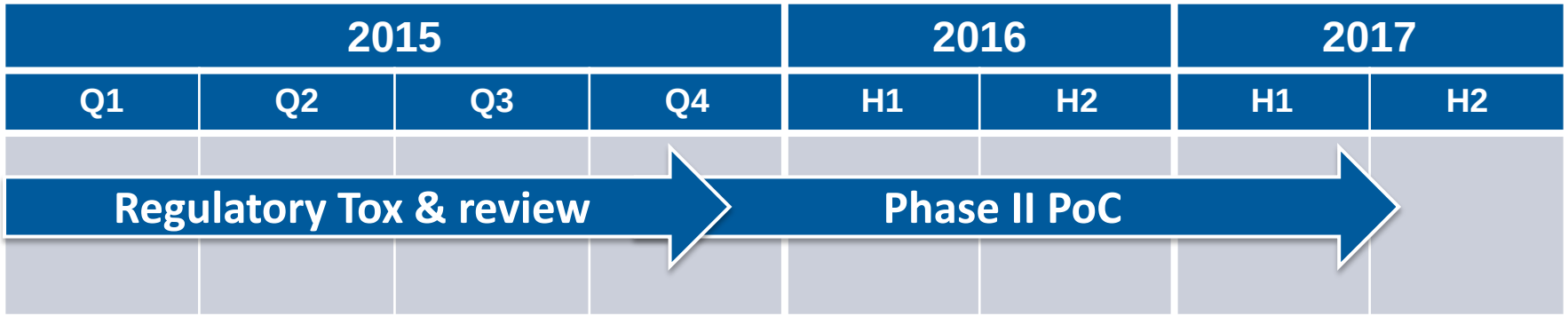


Cartilage degradation biomarker



MIV-711: potential to become the first disease-modifying osteoarthritis treatment

Planned development path:



Phase II enabling studies:

- Six months toxicology studies in two species ongoing

Phase II – Proof-of-Concept (PoC):

- Double-blind, placebo-controlled study to evaluate efficacy, safety and tolerability of MIV-711 in moderate knee joint osteoarthritis
- Structural (MRI), symptomatic (pain) and functional endpoints

Innovative biomarker/imaging driven development path designed in collaboration with KOLs to enable shortened PoC studies

MIV-711: a large and growing market opportunity

Summary

- **250 million people worldwide** estimated to suffer from knee OA in 2012 *(Nat. Rev. Rheumatol., 2014)*
- **Prevalence of OA is increasing** due to aging population and obesity epidemic
- **MIV-711 - targeted towards adult patients with moderate osteoarthritis in weight bearing joints** (>2 millions in US only)

MIV-711

"the first convenient disease modifying treatment for OA to slow down joint degeneration and reduce pain, thereby maintaining daily function and lowering disease related costs"

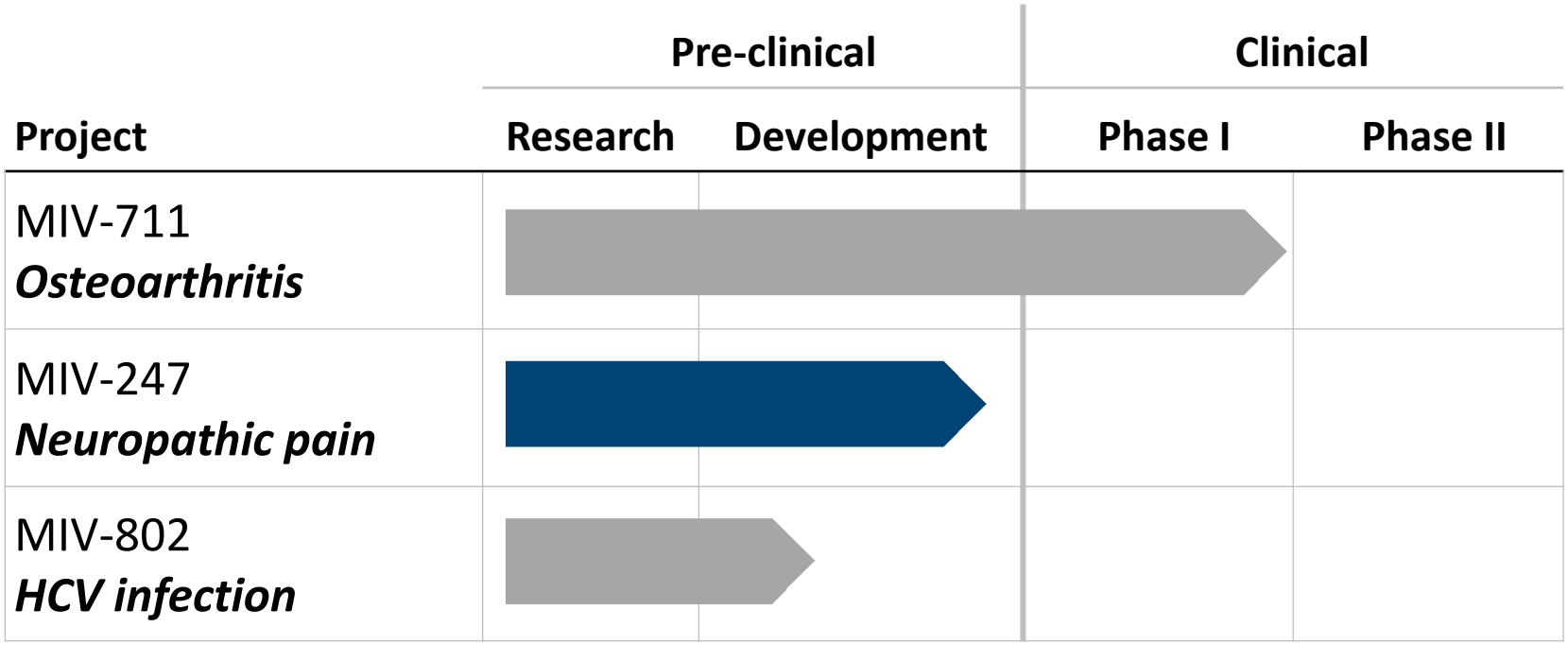
Market opportunity

- **Very large and attractive market opportunity**
- **Every 10% of the target population on the US market alone represents a potential of 600 MUSD* in annual sales**

* 10% market share represents 200,000 patients multiplied by an annual treatment cost of 3,000 USD/Year (*Losina et al 2014)*

Optimize value creation in development projects to generate diversified revenue from global partnerships

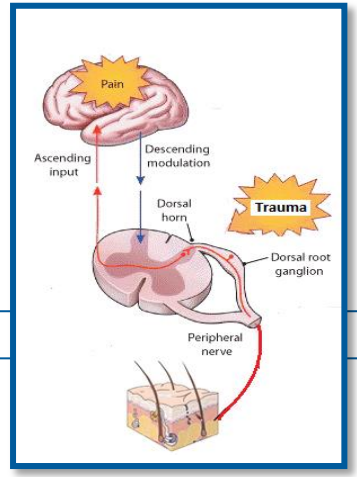
Continue development and out-license at most value creating point in development, preferably at clinical Proof of Concept



Neuropathic Pain (NP): a large medical need for novel, safe and efficacious treatments

Overview

- **Affects ~30 M people** in the 7 major markets
- **Caused by a trauma or disease affecting the nervous system** such as diabetes, shingles, cancer or chronic lower back pain
- **Limited efficacy and poor side effect profiles of current treatments**, including anticonvulsants (e.g. pregabalin & gabapentin) and antidepressants, (e.g. amytriptyline)



- **Overall sales in NP market 2012: 6 BUSD** (pregabalin: 1.8 BUSD, Lidocaine 5% patch: 0.7 BUSD and Duloxetine 0.6 BUSD + generic opioids and/or NSAIDs)

Key unmet needs

- **More efficacious Neuropathic Pain specific drugs with faster onset of action and fewer side-effects**

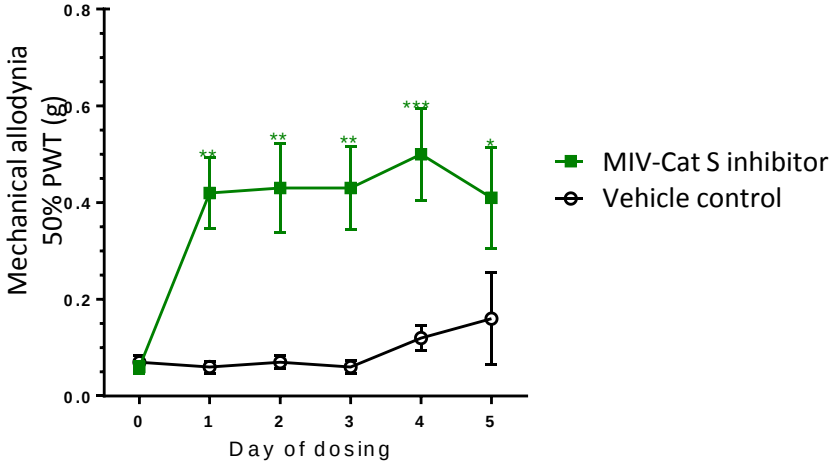
Source: Decision Resources

Cathepsin S inhibition: a new targeted mode of action in an under-served pain market

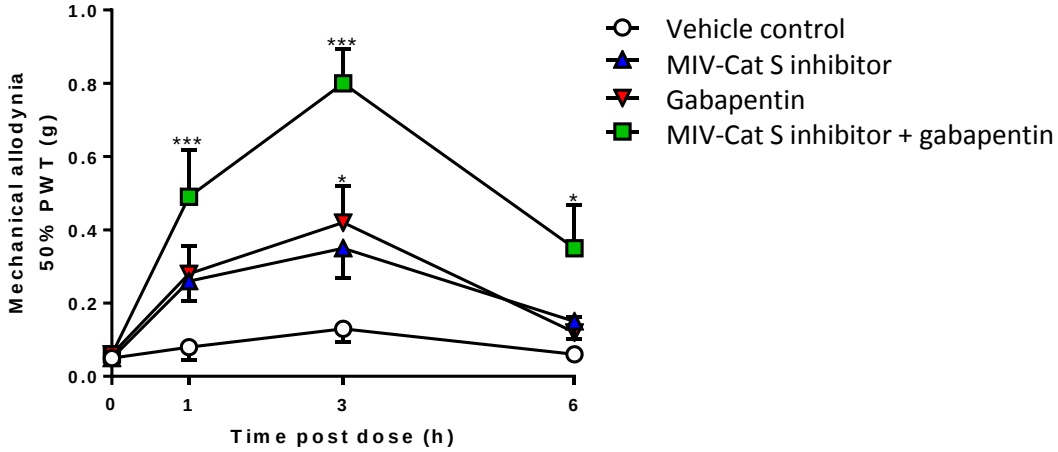
- **Up-regulated and released in conjunction with nerve damage**
  - leading to inflammatory reactions in the nervous system, resulting in neurogenic pain
- **Validated target** in a broad range of neuropathic pain (NP) models:
  - Peripheral nerve ligation, chronic nerve constriction, spinal cord nerve contusion injury, spinal nerve transection and chemotherapy induced NP

- **Medivir's cathepsin S inhibitors are efficacious***
  - as monotherapy and in combination with SoC in peripheral nerve ligation (PNL) model

Monotherapy - Fast and sustained effects with cathepsin S inhibition



Combination therapy - Enhanced effects with cathepsin S inhibitor and gabapentin



*Presented at the 15th World Congress on Pain, 2014

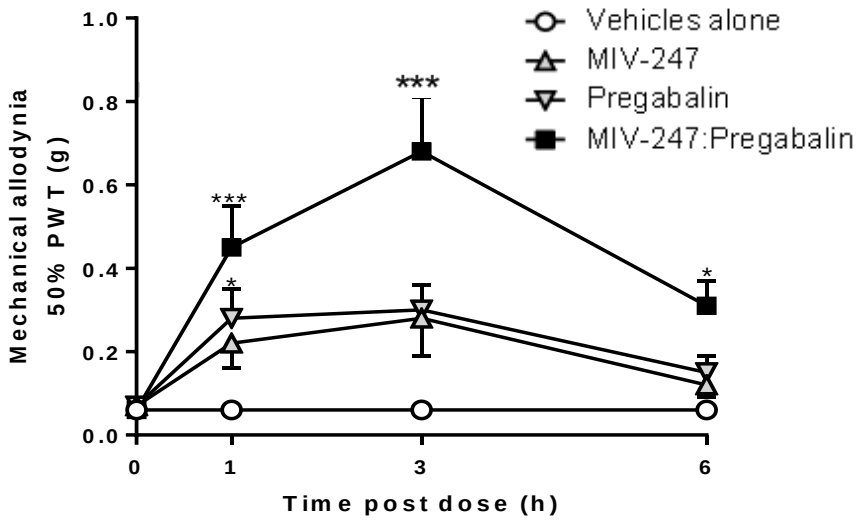
MIV-247: a potent and selective oral cathepsin S inhibitor in non-clinical development for the treatment of neuropathic pain

MIV-247:

- Efficacious after oral dosing in several preclinical models of neuropathic pain
- Enhanced efficacy when combined with pregabalin
- No CNS side effects at highest efficacious dose
- No other safety/toxicology findings to date
- *Further data to be presented at the 5th International Congress on Neuropathic Pain, May 14-17, Nice*

Combination with pregabalin

Minimal effective oral doses*



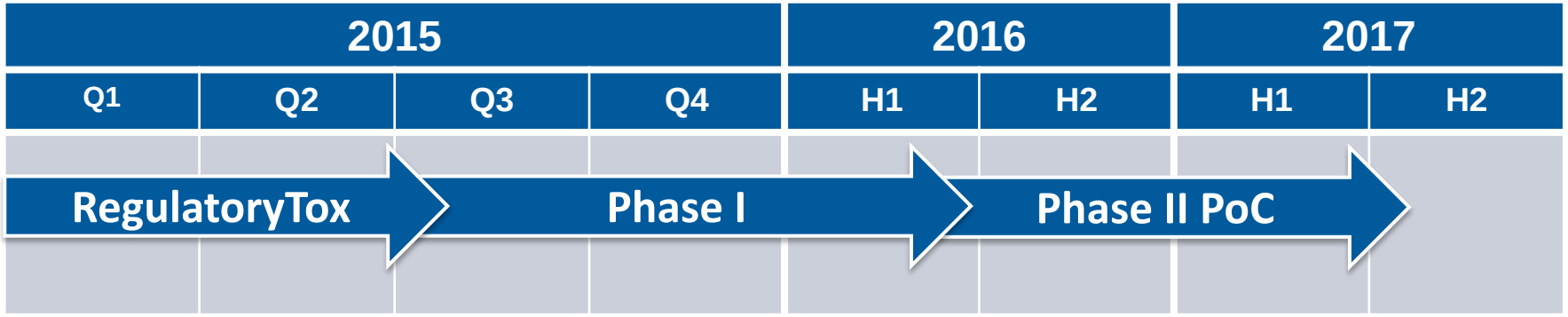
Data support therapeutic value of MIV-247 in a broad Neuropathic Pain patient population

- As first line monotherapy
- As an add-on to current SoC with potential to increase efficacy while decreasing side effect by lowered doses of the companion drug

* peripheral nerve ligation (PNL) model

MIV-247: preparing for start of clinical development

Planned development path:



Phase I – Adaptive design:

- Safety, tolerability, pharmacokinetics and food effect of single and multiple, ascending, oral doses in healthy young and elderly subjects
- Exploratory biomarker
- Start of Phase I planned for Q3 2015

MIV-247: large market with significant unmet needs

Summary

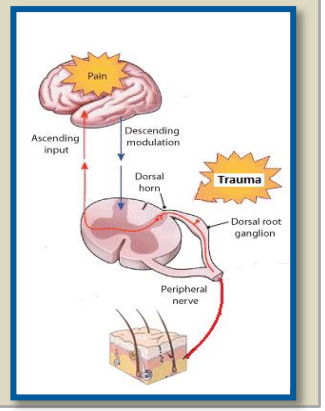
- **Neuropathic pain affects ~30 M people** in the 7 major markets
- **Limited efficacy and poor side effect profiles of current treatments**
- **In 2012, overall sales in NP market: 6 BUSD** (pregabalin: 1.8 BUSD, Lidocaine 5% patch: 0.7 BUSD and Duloxetine 0.6 BUSD + generic opioids and/or NSAIDs)

MIV-247

"an effective neuropathic pain treatment with fast onset of action, which is safe and well tolerated and which may be used alone or in combination with SoC "

Market opportunity

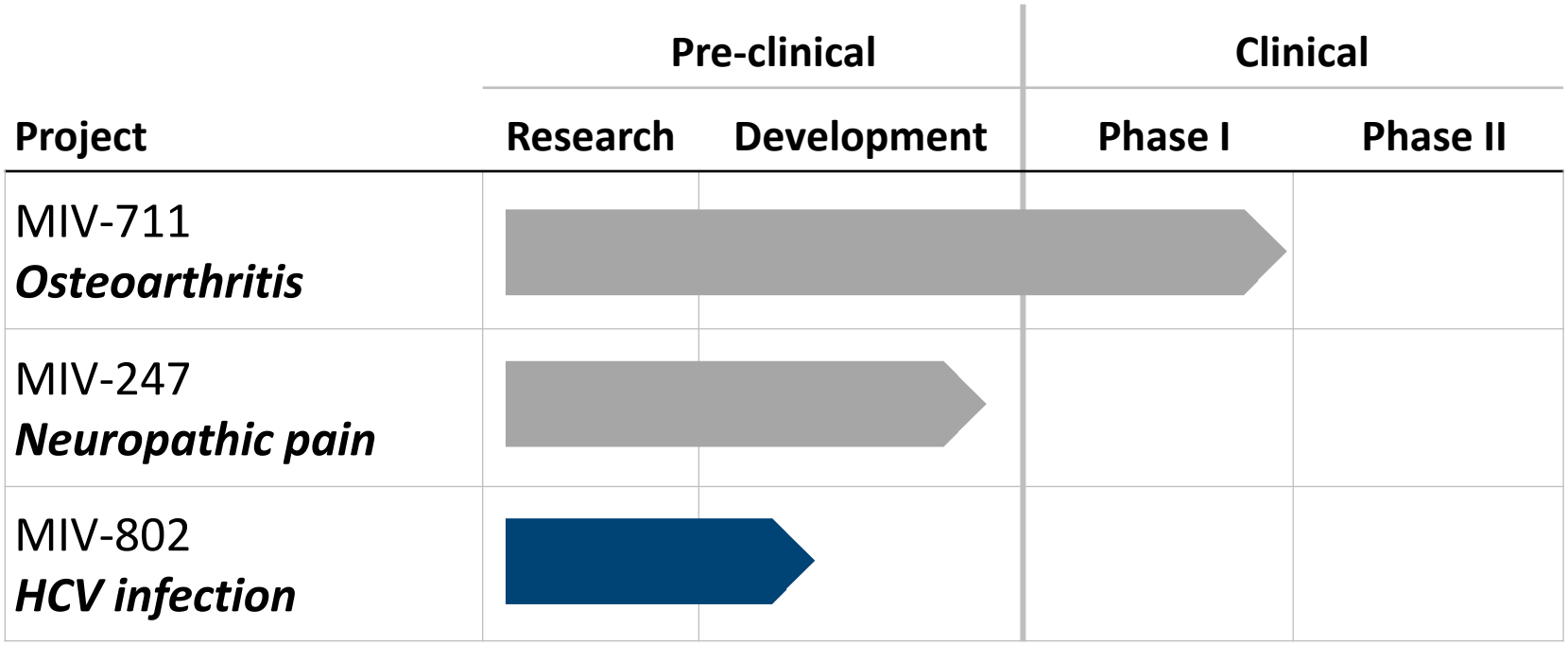
- **Large medical need for novel, safe and efficacious neuropathic pain treatment**
- **A novel treatment with less side effects and rapid on-set will have a market opportunity of > 1BUSD in annual sales**



Source: Decision Resources

Optimize value creation in development projects to generate diversified revenue from global partnerships

Continue development and out-license at most value creating point in development, preferably at clinical Proof of Concept



MIV-802: Nucleotide polymerase inhibitors are corner-stones in HCV therapy

Hepatitis C Overview

- **HCV therapy being revolutionized by all-oral interferon free regimens**
- **Future therapy expected to be drug combinations** with cross-genotype activity to achieve shortened durations of therapy
- **Nucleotides are the cornerstone of such combinations** because of their high level of antiviral activity, cross-genotype activity and high barrier to resistance

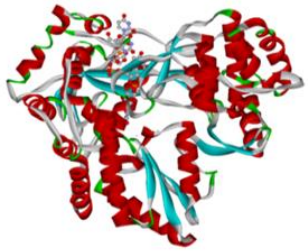
Key unmet needs

- **Companies wishing to offer pan-genotypic treatments with short durations will require a proprietary nucleotide**

MIV-802: Wholly-owned uridine protide with potent pangenotypic activity

HCV Nucleotide polymerase inhibitors

- Prodrugs (protides) that selectively deliver high levels of the active drug to the liver
- Uridine-based compounds appear to have better safety/efficacy profiles



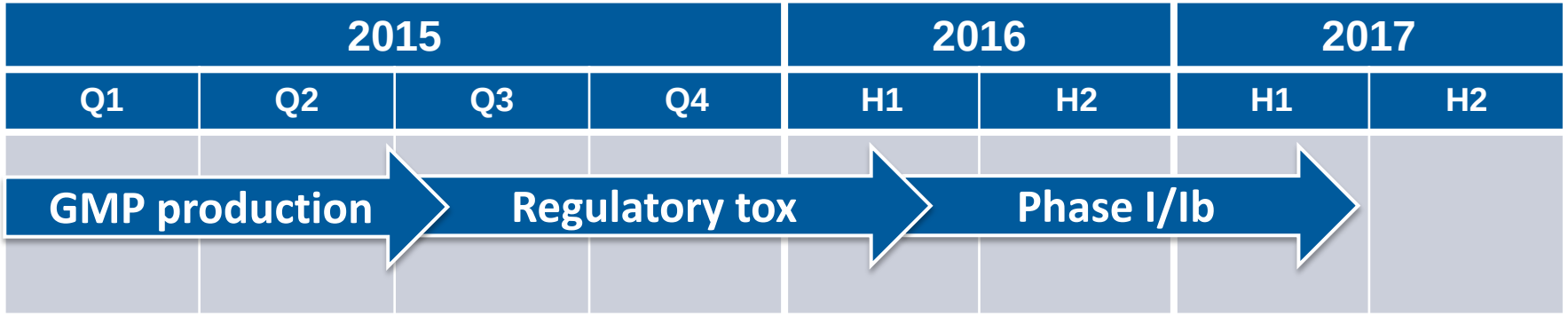
MIV-802: A liver-targeted uridine protide

- The active metabolite is a potent and selective inhibitor of the HCV NS5B polymerase
- Potent cross-genotype antiviral activity
- It generates high nucleoside triphosphate levels in the liver with a long half-life, supporting a low efficacious dose and a once daily dosing
- Excellent safety profile in both in vitro toxicity assays and 7-day tox study
- Favourable *in vitro* and *in vivo* ADME profile, combined with its antiviral profile, support combination with other classes of anti HCV drugs

Further data will be presented at the 50th International Liver Congress (EASL)
April 22-26, Vienna, Austria

MIV-802: entering phase I enabling studies 2H 2015

Planned early development path:



GMP production:

- Process development
- Production of GMP material

Phase I enabling studies:

- Including e.g. up to 28 days toxicology studies in two species

Phase I/Ib:

- Safety, tolerability and pharmacokinetics
- Single and multiple, ascending oral doses in healthy and HCV infected subjects

MIV-802: large potential for nucleotides

Summary

- **HCV therapy being revolutionized by all-oral interferon free regimens**
- **Future therapy expected to be drug combinations**
- **Nucleotides are the cornerstone of such combinations**

MIV-802

"highly effective anti-HCV nucleotide with cross-genotype activity for use in drug combinations with shortened treatment duration "

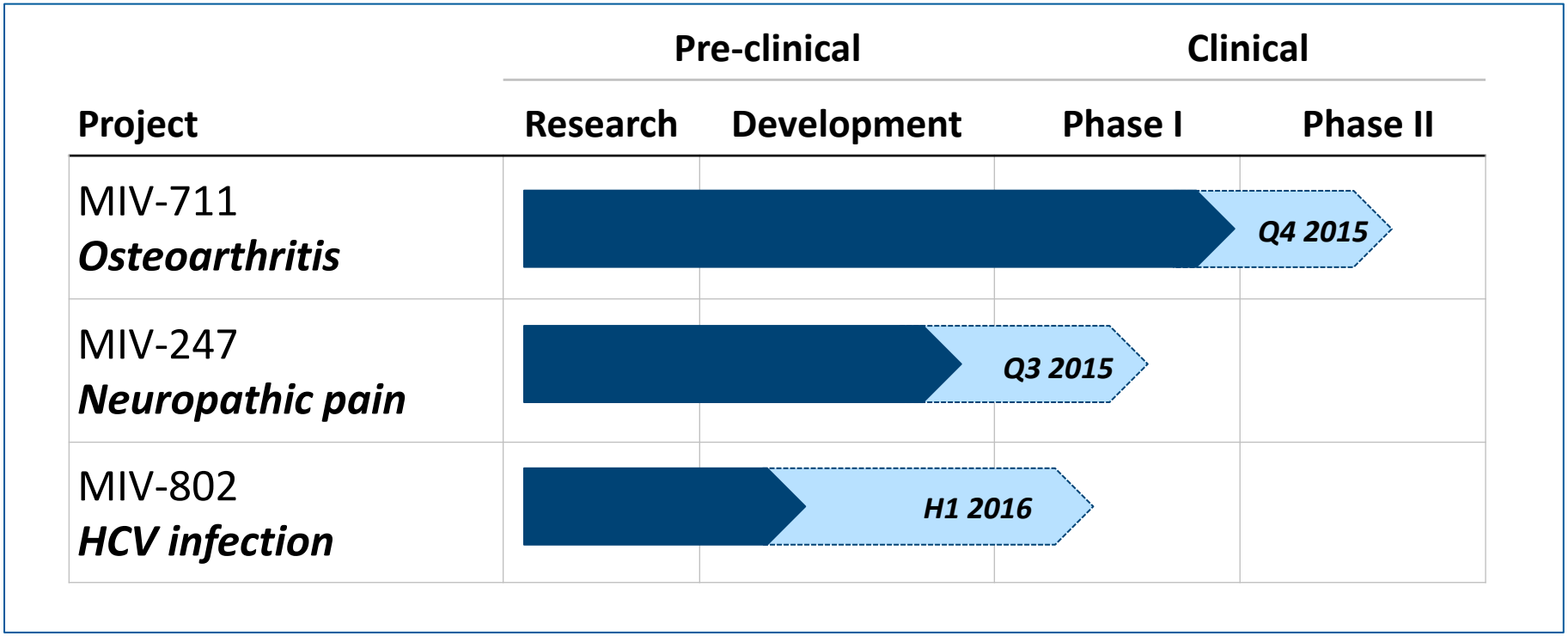
Market opportunity

- **MIV-802 is the same class as sofosbuvir (Sovaldi) and MK-3682 (formerly IDX21437)**

- partnership discussions ongoing -

Progressing the development pipeline for value creation

In ~12 months all projects will have progressed into the next development phase



Optimize value creation in development projects for out-licensing to generate diversified revenue from global partnerships

Agenda

Medivir's platform & strategy for sustainable value creation

Discovery – extending our expertise into oncology

Development – optimizing value of our pipeline assets

Nordic Commercial – driving profitable growth

Conclusions

Q&A

Cost-effective commercial platform set to drive growth through innovative specialty care product expansion

Nordic Commercial Operations
Supporting functions are common between Nordic Brands & Innovative Specialty Care Portfolio

Innovative Specialty Care Portfolio

- **Economies of scale: Nordic core & flexible/scalable country organizations**
- **Currently selling Adasuve® and OLYSIO®**
- **Retaining Nordic rights for out-licensed products**
- **In-license patented growth products:**
  - Key focus on Infectious diseases and Oncology
  - Opportunistically in other specialty areas when synergies

Nordic Brands

- **14 well established pharmaceuticals**
- **Stable annual sales revenues, 180 MSEK 2014**
- **Continuous activities to improve gross margins further:**
  - Efficiency
  - Prices
  - Production costs

Strong Nordic OLYSIO® launch is a result of an efficient commercial platform that is an engine for continuous growth

186 *MSEK*

Nordic OLYSIO® sales in 2014 makes it one of the best launches globally and it was driven by several key factors:

1.

An organization with excellent specialty care launch capabilities and a passion to secure that all patients that can benefit from our products get them as soon as possible

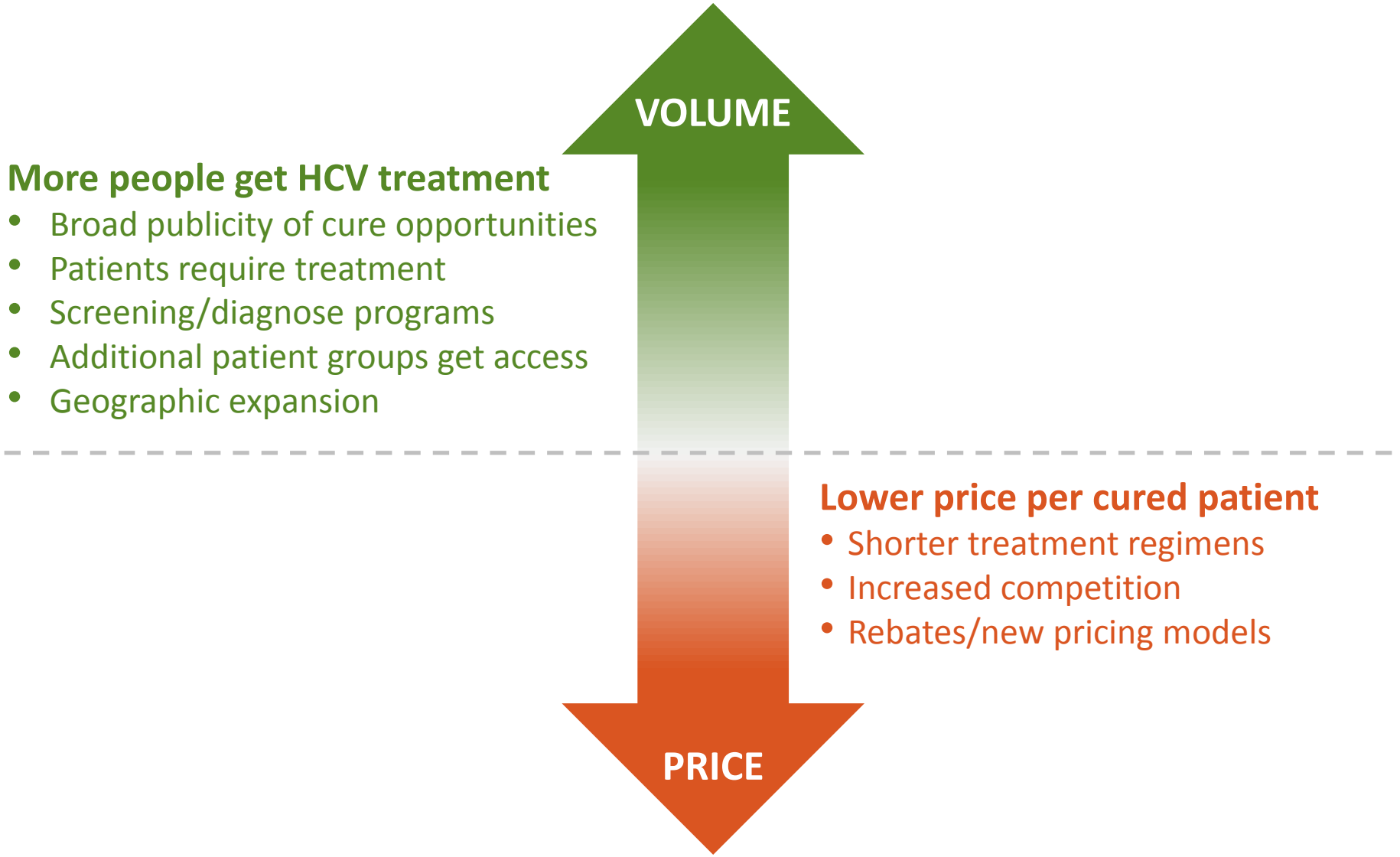
- **Medical Affairs:** Secured that OLYSIO® was included in national treatment guidelines
- **Market Access:** Generated fast national approvals and funding
- **Marketing/sales:** Effective launch activities and customer interactions

2.

Focus on a set of specialty care launch excellence elements resulted in critical achievements

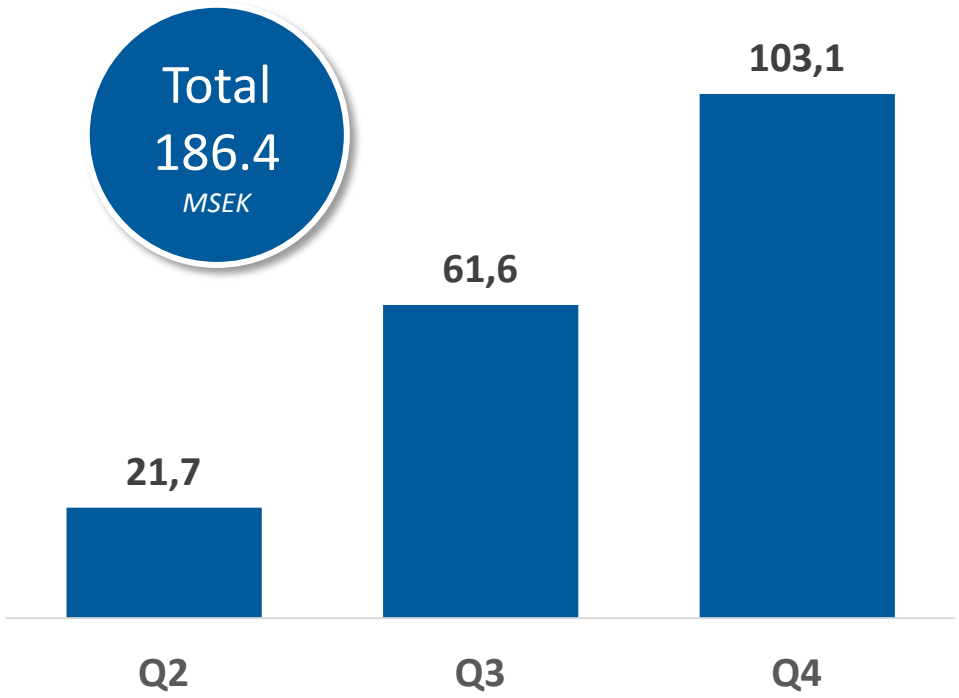
- High quality advisory boards and involvement of several Nordic centers in compassionate use program resulted in **fast inclusion of OLYSIO® in national treatment guidelines**
- Navigated the fast changing market access environment and used our agility to **sign OLYSIO® agreements with all Swedish county councils in record time**
- **KOLs with solid OLYSIO® experience were engaged** in sharing their positive experiences with colleagues at other centers to broaden the OLYSIO® usage

Global HCV market with dynamics also applicable for the Nordics



Increase in treated patients and strong OLYSIO® launch helps secure patient share despite intensified competition

Nordic OLYSIO® 2014 Sales



Nordic OLYSIO® Outlook

Number of patients getting OLYSIO®

- More HCV patients treated
- Broad & positive OLYSIO® experience
- Impressive real world data
- Several J&J trials ongoing

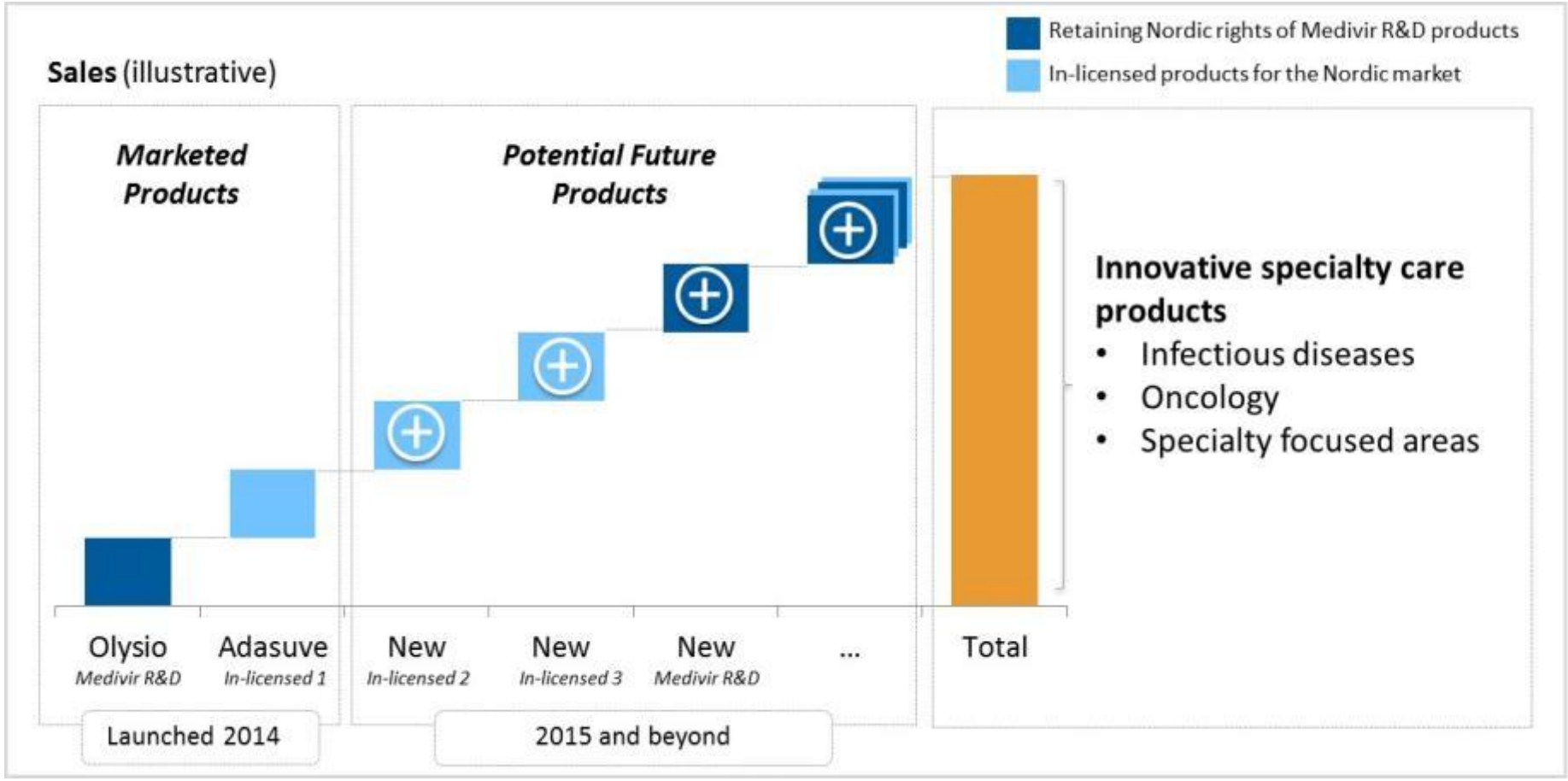
Price per patient & increasing competition

- Rapidly changing market access environment
- Harvoni launched in Q4-2014
- Viekirax/Exviera launched in Q1-2015
- Treatment recomendations are changing

OLYSIO® remains an important treatment option, but revenues will decrease

Launching new specialty care pharmaceuticals

Innovative Specialty Care Portfolio



- **Nordic rights to be retained for Medivir's R&D products**
- **Ongoing in-licensing discussions for the Nordic market**
- **Successful Nordic OLYSIO® launch provides positive track record for in-licensing opportunities**
- **Continuous revenue growth by repeatedly applying our commercial launch excellence to new products**

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Medivir's platform & strategy for sustainable value creation

Discovery – extending our expertise into oncology

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Medivir is in a much stronger position today than ever before

Platform and strategy for sustainable value creation

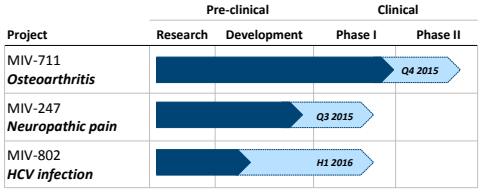
- Continue to discover, develop and capitalize on investments in innovation
- History of bringing valuable drugs from bench to bedside

Extending our expertise into oncology

- Many opportunities to use our platform to deliver high-value projects
- Focus on indications with significant unmet medical need

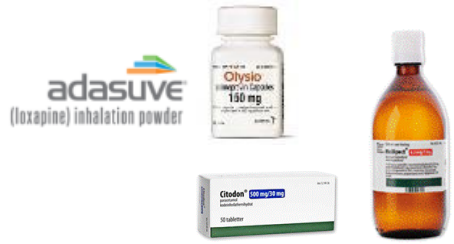
Optimizing value of our pipeline assets

- Continue development and out-license at most value creating point
- 3 high potential projects in development



Driving profitable growth in the Nordics (Innovative specialty care & Nordic Brands)

- Cost-effective commercial platform set to drive growth
- Successful Nordic OLYSIO® launch provides positive track record



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Our ambition is to be transparent in our communication

We will continue to announce / communicate

- Our Nordic sales Quarter by Quarter
- Important agreements or collaborations
- Milestone, progress or relevant and important study results in our internally-driven projects
- Milestones, progress or relevant and important study results related to partnered products, like simeprevir, as they become public or are presented by our partner
- Ambition to communicate everything that is relevant for Medivir, but competitive and commercial situation for our partners is an important factor

We will improve

- We will improve the presentation of Medivir, our pipeline and our products on our web-site, and simplify the information in our quarterly reports

We will not

- Report monthly sales statistics on our own products
- Comment on global sales or development of partnered products, like simeprevir, outside of partner's own communication
- Provide guidance on expected revenues or earnings

Medivir is in a much stronger position today than ever before and we have the platform for sustainable value creation

www.medivir

Ticker: MVIR
Exchange: OMX / NASDAQ

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