

SynAct Pharma AB (publ)

Transforming the treatment of severe inflammatory diseases

Stockholm, October 2020



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- Focus on developing a novel treatment concept for inflammatory and autoimmune diseases by targeting the melanocortin system
- High unmet need in inflammatory diseases for therapeutics that can spare the use of immunomodulatory agents due to their poor side effect profile
- Development of lead asset, AP1189, is currently underway in three separate Phase II trials for various indications with inflammatory manifestations, including orphan diseases
- Several near-term value inflection points:
 - 2Q21 – Complete Phase IIa AP1189 data in rheumatoid arthritis
 - 2Q21 – Complete Phase IIa AP1189 data in COVID-19-induced ARDS
 - 2H21 – Complete Phase IIa AP1189 data in nephrotic syndrome
- Management with strong track record in clinical development as well as global business development and a supervisory board with decades of experience in research
- Continually evaluating compelling business development opportunities

Facts and Figures

Founded in 2013

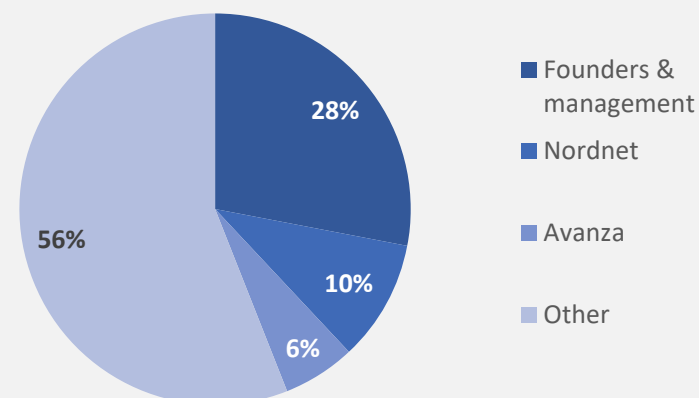
Listed on Spotlight exchange since 2016

Market cap: c. SEK 1.0bn / c. EUR 95m

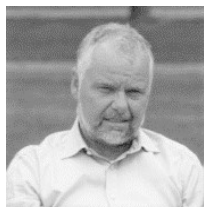
Ticker: (SYNACT:SS)

Cash balance: SEK 4.3m / EUR 410k (as of 30 June 2020), excluding SEK 32.4m / EUR 3.2m raised in July 2020

Ownership structure



SynAct Pharma – Experienced Management



Jeppe Øvli Øvlesen, MBA – CEO

- >20 years of CEO experience
- Founding Board Member of more than 10 biotech/medtech companies
- Co-founder of TXP Pharma
- Former CFO & VP BD of Action Pharma
- Holdings: 1,396,583



Torbjørn Bjerke, MD – Chairman

- >25 years track record from Pharma industry as Head R&D and CEO (private & public)
- Co-founder of Action Pharma, TXP Pharma and Arctic Aurora Life Science
- Member, BoD for DBV Technologies
- Holdings: 763,512



Thomas Jonassen, MD – Co-founder & CSO

- Member, Board of Directors
- Associate Professor, KU in Denmark
- Visiting Professor, WHRI, UK
- Co-founder of TXP Pharma
- Co-founder and former CSO of Action Pharma
- Holdings: 2,236,971



John Haurum, MD – Board Member

- Former CEO of F-star (UK) with deal flow in excess of €200m
- Co Founder and former CSO of Symphogen
- Member of the board in a number of European biotech companies
- Holdings: 29,840



Henrik Stage, MsC – CFO

- >25 years experience from Biotech and financial industry
- Former CEO and CFO at Santaris Pharma sold to Roche for \$450m
- >\$150m from Big Pharma deals. Prepared Santaris for US Nasdaq IPO
- Holdings: 511,430



Terje Kelland, MD – Board Member

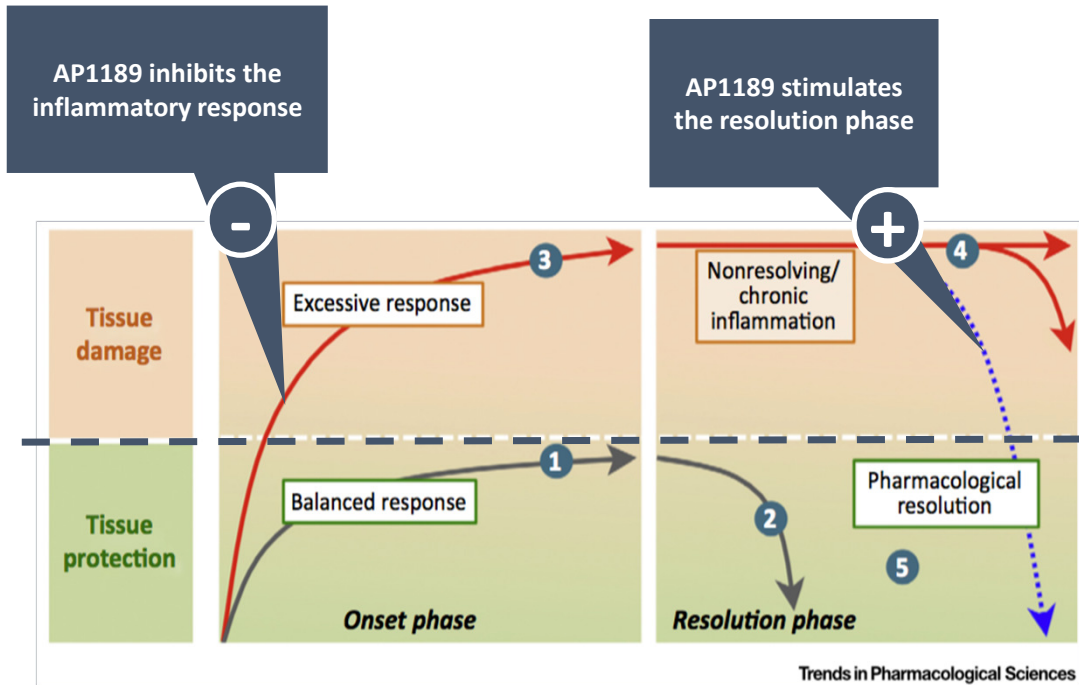
- Former Executive positions in Novo Nordisk, SOBI, and Pharmacia
- Former Vice VD of Karolinska Dev.
- Background as a professor at Lunds U.
- Holdings: 0



SynAct Pharma – Pipeline Overview

Asset	Indication	Preclinical	Phase I	Phase IIa	Phase IIb	Phase III	Next milestone
AP1189	Rheumatoid Arthritis	▶					2Q21 final readout
	Nephrotic Syndrome	▶					2H21 final readout
	COVID-19-induced acute respiratory distress syndrome	▶					2Q21 final readout
	Psoriatic Arthritis*	▶					
Pharmacology program		▶					

* Phase II development to await data from RA study



The Inflammatory Response

- 1 Inflammatory response effectively controlled in extent and time – protects tissues and limits damage
- 2 Pathways activated to safely terminate the inflammatory response and promote healing
- 3 Exaggerated response to inflammatory stimuli – can have detrimental consequences and harm tissues
- 4 Failure to achieve resolution of inflammation can result in chronic inflammatory state
- 5 Activation of endogenous resolution pathways have potential to restore tissues and function

Resolution therapy holds promise to correct overshooting/ongoing inflammation in many pathological settings
 Compared to most current therapeutic approaches Resolution Therapy does not induce immuno-suppression
 Lead compound AP1189 could be applied early in inflammatory diseases to restore normal functionality

The Melanocortin System and its Role in Inflammation

Melanocortin Receptor Family

MC1R
MC2R
MC3R
MC4R
MC5R

■ Steroidal dependent effects ■ Steroidal independent effects

Discovery of the family of 5 melanocortin receptors has provided nuance to the system's role in adrenal stimulation and steroidogenesis

MC1R and MC3R are believed to be the key receptors involved in immunomodulation

Melanocortin is activated in inflammatory diseases

MC3
mφ
Inflammation
Resolution
Apoptotic body
Zymosan particles
↑ Efferocytosis
↑ Phagocytosis
MC3
Pro-inflammatory stimulus
↑ cAMP
NFκB
↑ HO-1
Inflammatory response genes
↓ IL-1, IL-6, TNFα

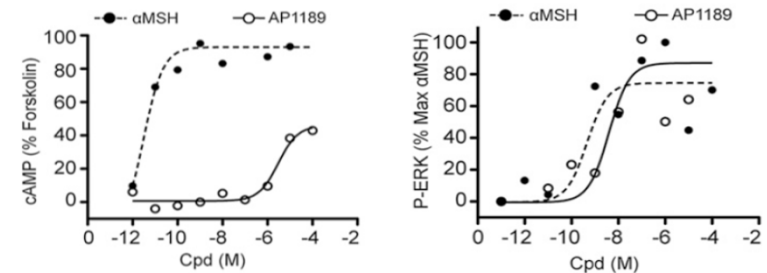
Melanocortins are endogenous peptides released during inflammatory processes

Stimulation of MC1R and MC3R promote naturally occurring resolution processes to fight excessive inflammatory processes

AP1189

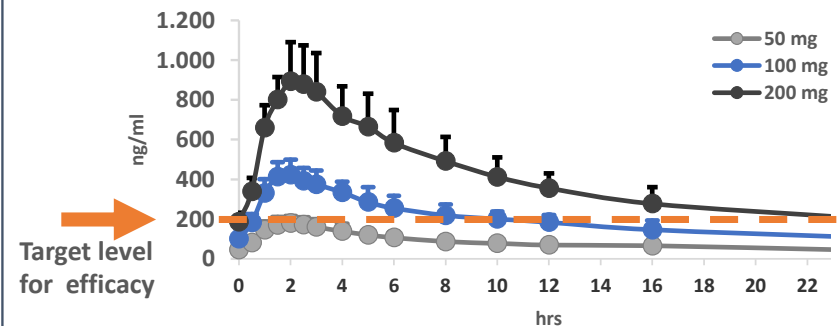
- First-in-class biased melanocortin receptor type 1 and 3 agonist
- The compound stimulates resolution of inflammation
- The compound has shown treatment effects in a number of experimental disease models, including:
 - *Inflammatory Joint diseases (Rheumatoid and Psoriatic Arthritis)*
 - *Inflammatory bowel diseases*
 - *Nephrotic syndrome*
- The compound is intended for once daily oral dosing
- Experience in clinical trials thus far has demonstrated a safe and well-tolerated side effect profile – differentiated from other melanocortin-derived therapies

MC1 receptor activation in transfected cells¹



AP1189 selectively engages MC1R

PK profile following repeat dosing in man²



PK profile demonstrates once daily potential

1. Montero-Melendez et al: J Immunol. 194:3381-8, 2015; 2. Data from Completed Phase 1 study in healthy volunteers

Melanocortin-derived therapies address high unmet needs

- Current melanocortin-derived therapy is unspecific and associated with treatment limiting side effects
- Despite the unwanted side effect profile, the current melanocortin-derived therapy has shown efficacy where no other treatment regimens have
- Novel melanocortin-derived therapy, without treatment limiting side effects, could address a high unmet need in inflammatory and autoimmune diseases

Evidence of efficacy has been generated across many indications

Original Clinical Science - General

ACTH Gel in Resistant Focal Segmental Glomerulosclerosis After Kidney Transplantation

Wang W, Liang M, D'Avila M, et al. JAMA. 2019;321(12):1181-1189.

Background: Treatment of focal segmental glomerulosclerosis (FSGS) after kidney transplantation is challenging. The objective was to investigate the use of adrenocorticotropic hormone (ACTH) analogs in patients with de novo or recurrent FSGS resistant to therapeutic immunosuppression (TIS) and/or corticosteroids. **Methods:** We conducted a retrospective review of 48 non-TIS-related de novo FSGS and 17 de novo FSGS-related to transplantation. Mean age was 45.5 years, 14 (29%) were male, 13 (27%) were white, and 8 (17%) had previous kidney transplants. Mean time to relapse and/or recurrence was 10.7 months posttransplant. The majority relapsed, 10 (21%) at treatment of the first relapse and 10 (21%) relapsed a second time, which was treated with the use of ACTH. Significant improvement of urine protein to creatinine ratio was seen in 45 of 65 (69%) patients after the use of ACTH gel (P < .004). Ten (20%) patients achieved complete or partial remission. **Conclusions:** The response varied among the recipients. ACTH gel might be an effective therapy for corticosteroid-resistant FSGS in response to TIS and/or relapse.

Abstract

Introduction: Reproductive corticosteroid injection (RCI) has immunomodulatory and anti-inflammatory effects and is approved for multiple indications, including severe and acute chronic allergic and inflammatory processes involving the eye and adnexa. This study describes patient characteristics, clinical presentation, and physician assessment of patients with arthritis treated with RCI.

Methods: This was a retrospective medical record review of US patients. Eligible patients received RCI in the past 12 months, and had completed or were receiving RCI data collection. Baseline characteristics and after-treatment clinical data are described.

Results: The study included 64 patients (mean age 44 years, 42% female, and mean 16 years). Most patients had moderate to severe arthritis (n = 48, 53%) to service (n = 21, 23%) visual impairment before RCI therapy. Patients used an average of 2.5 medications before RCI. Baseline RCI adjustments, and treatment durations were different for each patient. Concomitant medications were reduced during RCI. 76 patients (84%) improved, 12 patients (16%) needed the use of RCI. 86% of patients had improvements in vision.

Conclusions: Physician individualized RCI therapy among patients who suffered from arthritis when previous therapies were inadequate. Most patients improved after initiating RCI therapy. The findings support use of RCI for arthritis and provide a better understanding of and practice patterns to guide appropriate use.

Received: January 31, 2020 / Published online: March 17, 2020
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Retrospective Medical Record Review to Describe Use of Reproductive Corticosteroid Injection Among Patients with Uveitis in the United States

Winnik W, Nelson T, Antonio-Franco Lima L, et al. Ocul Immunol Inflamm. 2020;28(1):1-10.

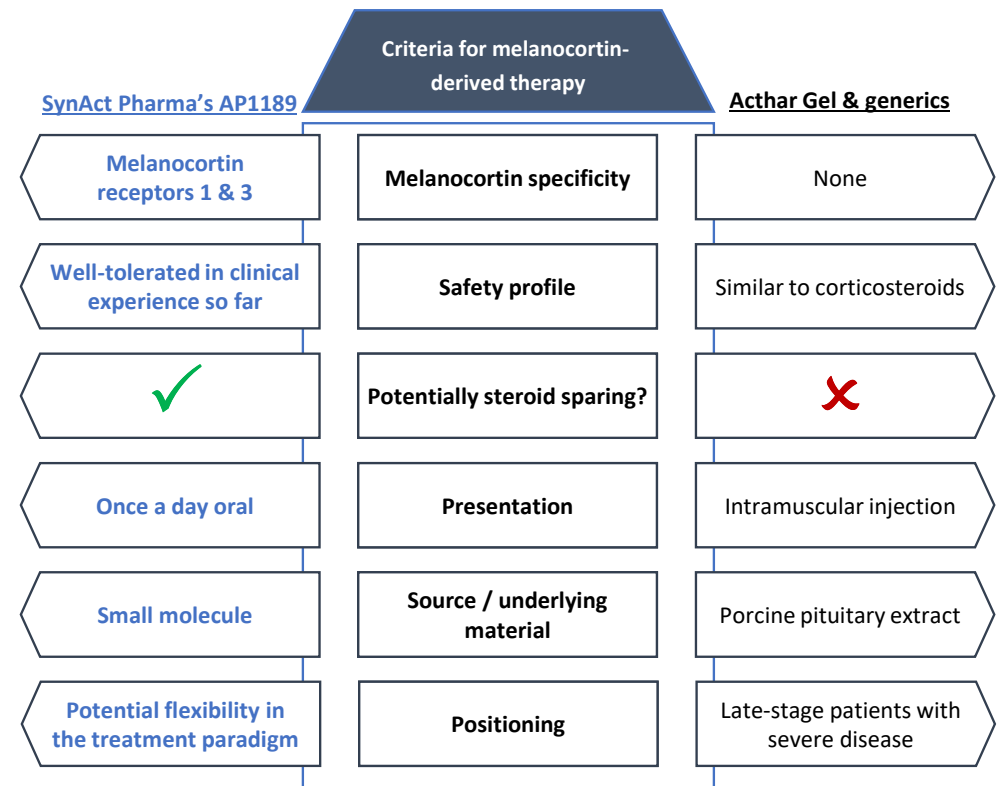
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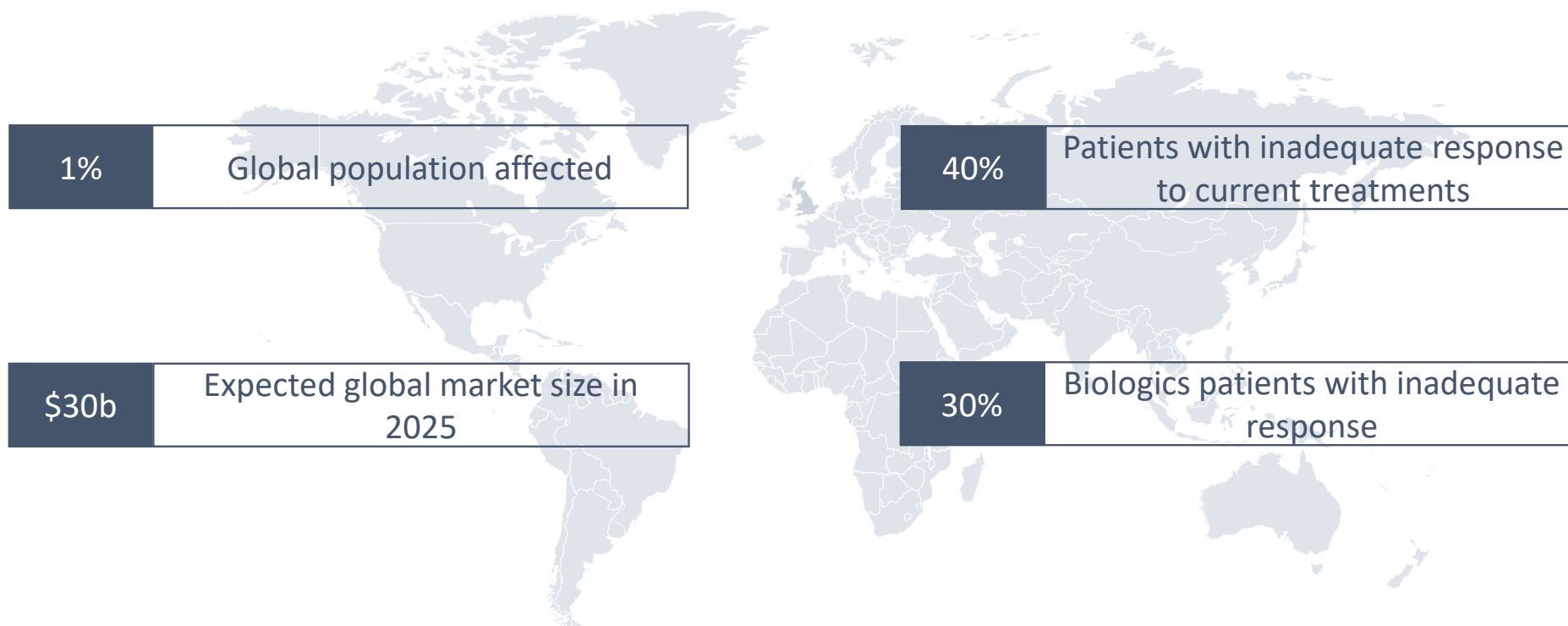
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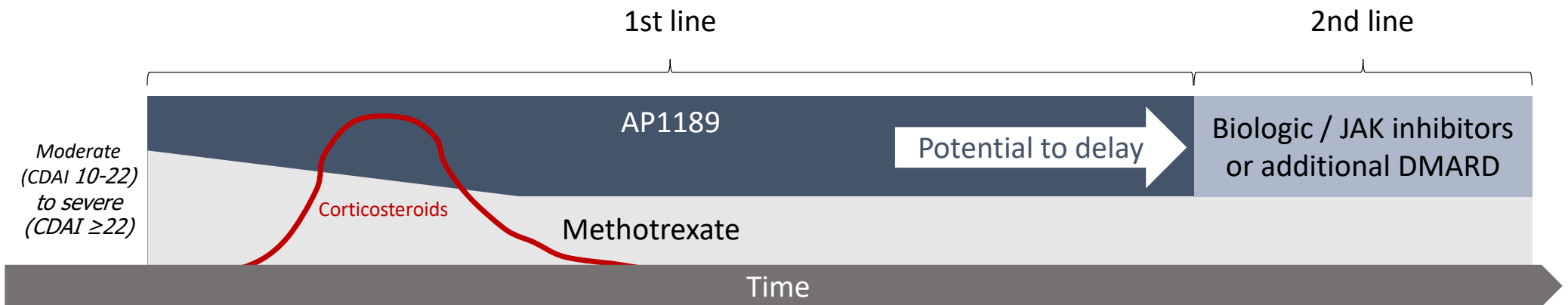


AP1189 - Phase II Development in Rheumatoid Arthritis
Positioning as add-on Therapy in Active Joint Disease



AP1189 has potential to attenuate RA symptoms , decrease time to resolution, and reduce need for corticosteroid treatment

AP1189's fit in the Rheumatoid Arthritis Treatment Paradigm



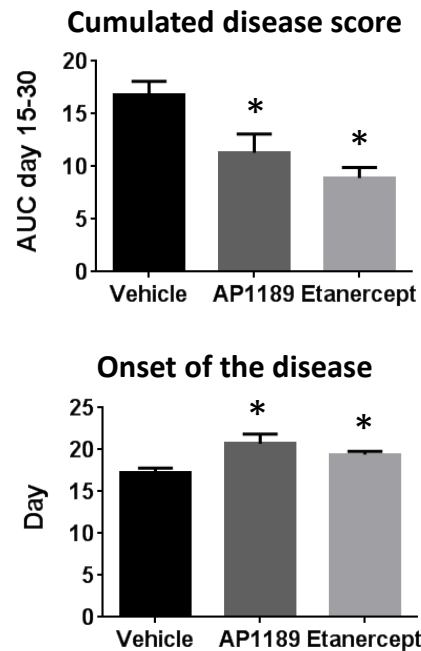
Current guidelines recommends to go to 2nd line treatment if methotrexate treatment shows lack of efficacy following 6 month treatment

AP1189 promotes inflammatory resolution and has no immunosuppressive effects, making it more suitable for 1st line treatment and providing more pharmacoeconomic benefit compared to biologics and/or JAK inhibitors

AP1189 Demonstrates Efficacy in Arthritis Models

Collagen-induced arthritis

(30mg/kg, p.o.)

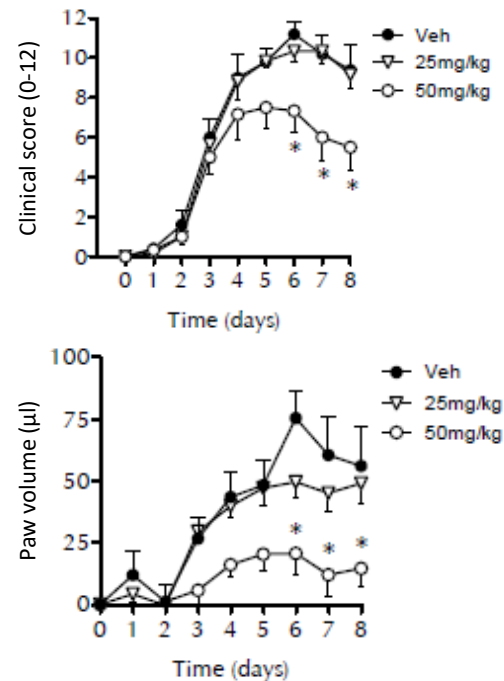


Unpublished data: n=10, *: p < 0.05 vs Vehicle

AP1189 provided a significant reduction in disease score as well as delay in onset

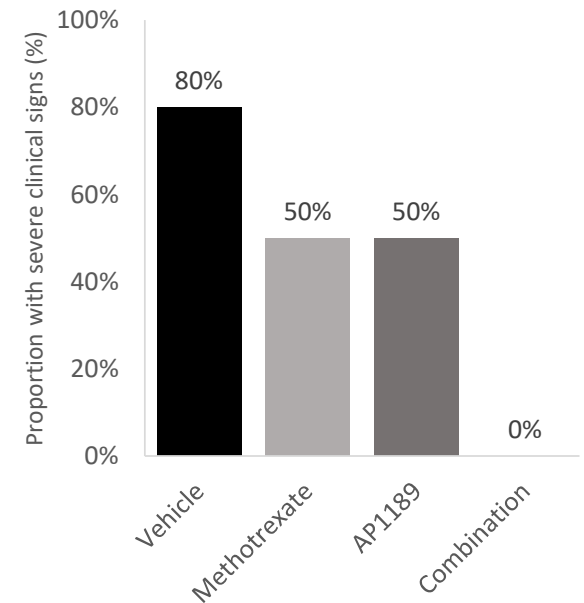
K/BxN-induced arthritis

(25/50mg/kg, i.p.)



AP1189 provided a dose-dependent result in K/BxN-induced arthritis

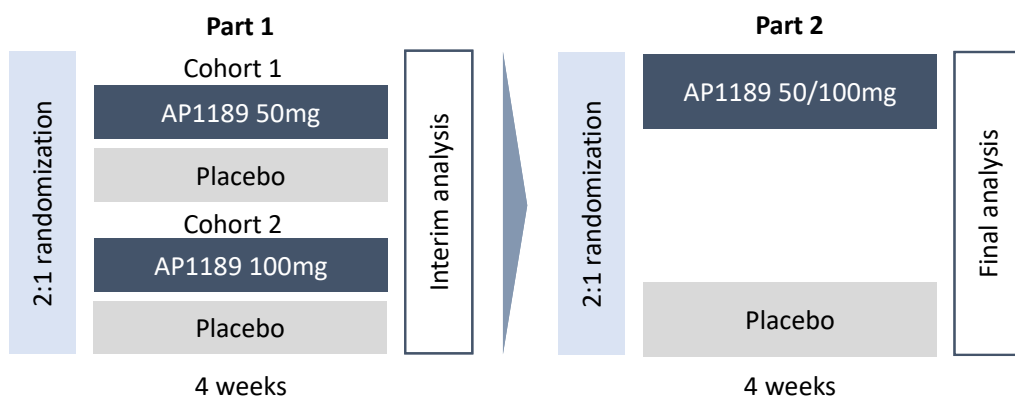
Combination Treatment with Methotrexate



n=6 per group

Incidence of severe clinical signs in K/BxN induced arthritis

Phase IIa trial design



Key inclusion criteria:

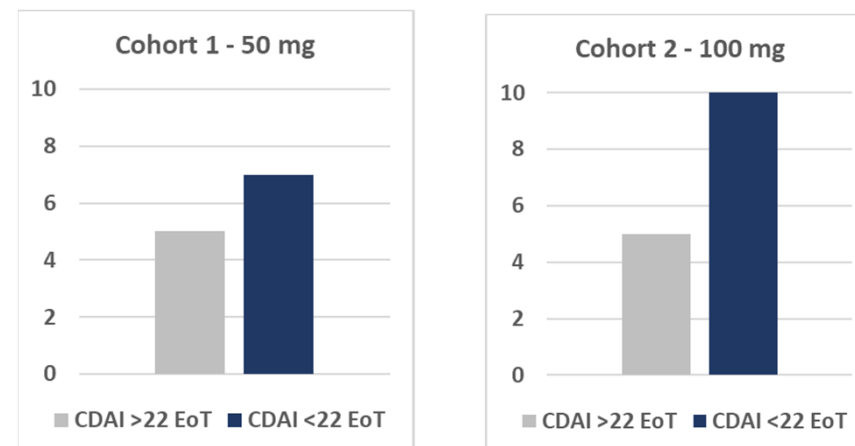
- Severe RA (CDAI score >22)
- Treatment naive
- Candidate for and planning to start methotrexate treatment
- Eligible for sites in Denmark, Sweden, and Norway

Primary endpoint: Reduction in CDAI below 22 relative to placebo

Secondary endpoints:

- Swollen and tender joints
- CDAI score
- DAS28 score
- HAQ-DI score
- FACIT-Fatigue questionnaire
- ACR response

Blinded observations reported to date



- Pts grouped on CDAI at End of Treatment (EoT).
- Analysis on blinded and non-validated data from ongoing study
- Cohort 1 data from 12 pts reported in press release May 5, 2020;
- Cohort 2 data from 15 pts reported in press release October 12, 2020

Key Takeaways

- Both cohorts show a group of patients with notable declines in CDAI score from baseline
 - Cohort 1: 7 out of 12 pts
 - Cohort 2: 10 out of 15 pts
- Blinded safety review (on non-validated data) suggests that AP1189 is safe and well-tolerated



AP1189 – Phase II Development in Nephrotic Syndrome
Positioning as alternative to immuno-suppressive Therapy

Nephrotic Syndrome

c.150k

Prevalence across US and EU

Limited

Treatment options for patients

c. 1/3

Patients with inadequate response
to current treatments

Unmet Need

- Limited clinical guidelines exist for the proper management of Nephrotic Syndrome
- Management consists of therapeutic treatment with diuretics, ACE inhibitors, anti-infectives, lipid-lowering agents, and immunosuppressants
- High risk of developing Chronic Kidney Disease
- Impacts pediatrics as well as adults
- Potential for Orphan Drug Designation


AP1189 directly stimulates melanocortin receptors on podocytes, which are associated with restoration of full kidney functionality

SCIENTIFIC REPORTS

OPEN

Amplification of the Melanocortin-1 Receptor in Nephrotic Syndrome Identifies a Target for Podocyte Cytoskeleton Stabilization

Received: 21 May 2018
Accepted: 5 October 2018
Published online: 24 October 2018

Lovisa Bergwall¹, Hanna Wallentin¹, Johannes Elvin², Peidi Liu¹, Roberto Boi¹, Carina Sihlbom³, Kyle Hayes⁴, Dale Wright⁴, Börje Haraldsson¹, Jenny Nyström¹ & Lisa Buvald¹ 

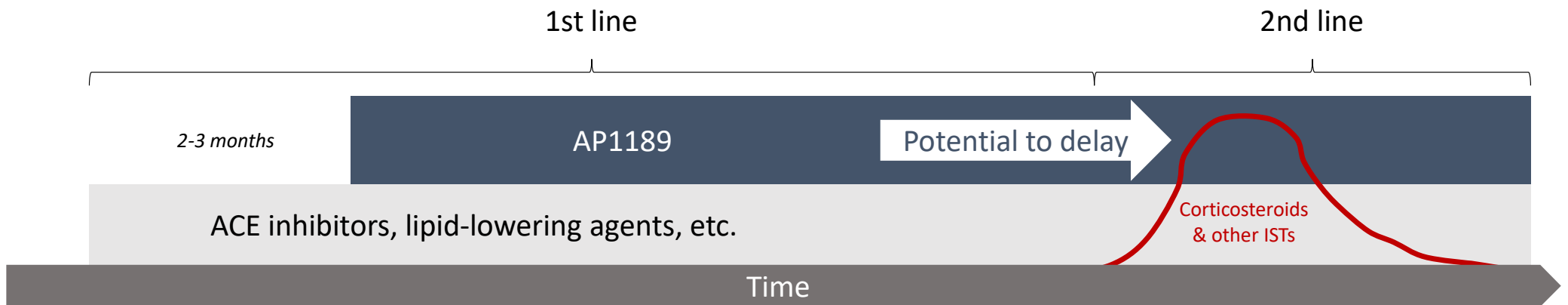
The melanocortin-1 receptor (MC1R) in podocytes has been suggested as the mediator of the ACTH renoprotective effect in patients with nephrotic syndrome with the mechanism of action being stabilization of the podocyte actin cytoskeleton. To understand how melanocortin receptors are regulated in nephrotic syndrome and how they are involved in restoration of filtration barrier function, melanocortin receptor expression was evaluated in patients and a rat model of nephrotic syndrome in combination with cell culture analysis. Phosphoproteomics was applied and identified MC1R pathways confirmed using biochemical analysis. We found that glomerular MC1R expression was increased in nephrotic syndrome, both in humans and in a rat model. A MC1R agonist protected podocytes from protamine sulfate induced stress fiber loss with the top ranked phosphoproteomic MC1R activated pathway being *actin cytoskeleton signaling*. Actin stabilization through the MC1R consisted of ERK1/2 dependent phosphorylation and inactivation of EGFR signaling with stabilization of synaptopodin and stressfibers in podocytes. These results further explain how patients with nephrotic syndrome show responsiveness to MC1R receptor activation by decreasing EGFR signaling and as a consequence restore filtration barrier function by stabilizing the podocyte actin cytoskeleton.

MC1R & Nephrotic Syndrome

- MC1R expression is increased in nephrotic syndrome, both in rat models and in humans
- MC1R agonism induced protection of podocytes from stress fiber loss
- Actin stabilization through the MC1R consisted of ERK1/2 dependent phosphorylation and inactivation of EGFR signaling with stabilization of synaptopodin and stress fibers in podocytes
- Patients with nephrotic syndrome show responsiveness to MC1R receptor activation by decreasing EGFR signaling (through ERK dependent Phosphorylation) and as a consequence restore filtration barrier function by stabilizing the podocyte actin cytoskeleton

AP1189 induces its pharmacological effects through MC1R and MC3R-mediated ERK dependent phosphorylation

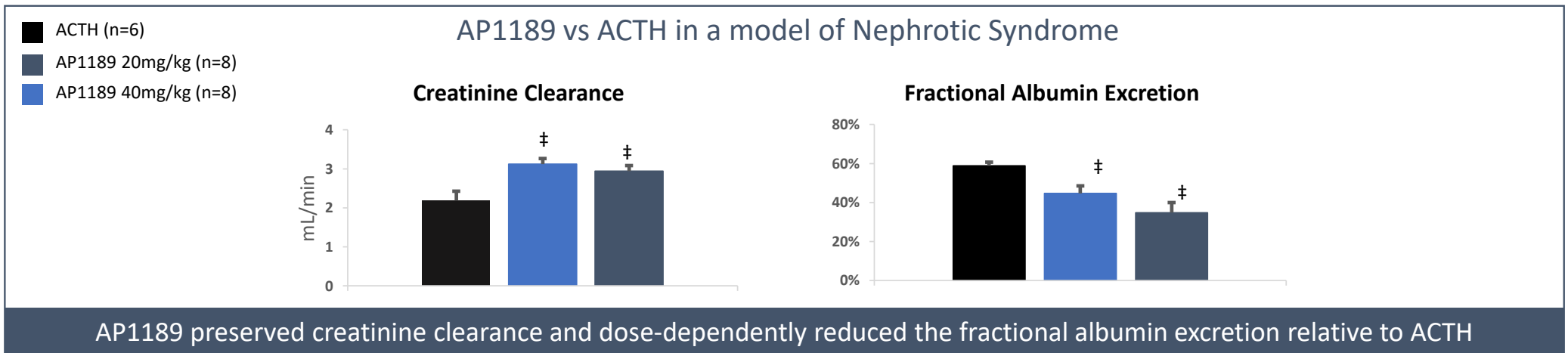
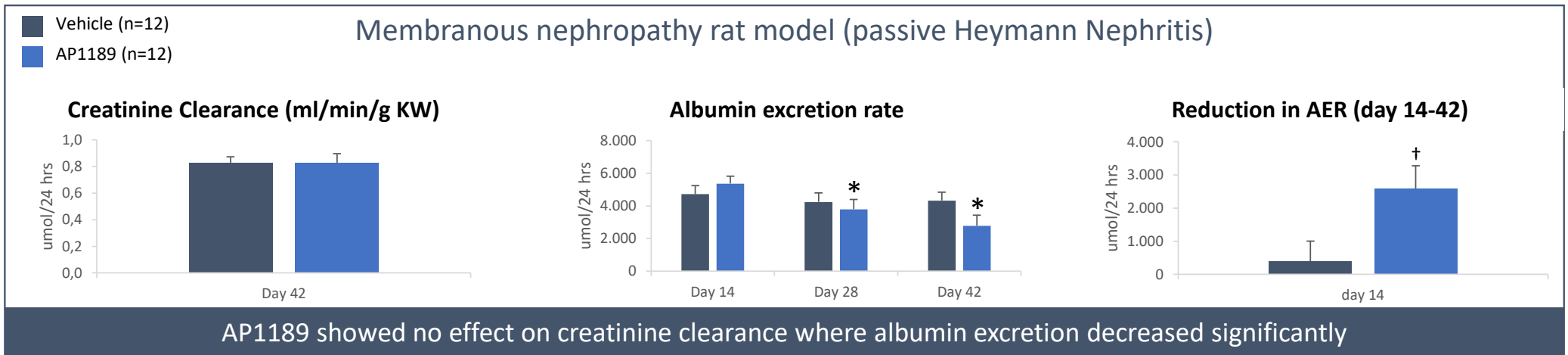
AP1189's fit in the Nephrotic Syndrome Treatment Paradigm



Current clinical practice is to go to 2nd line treatment if continued proteinuria is present following 6 months of ACE inhibitor treatment

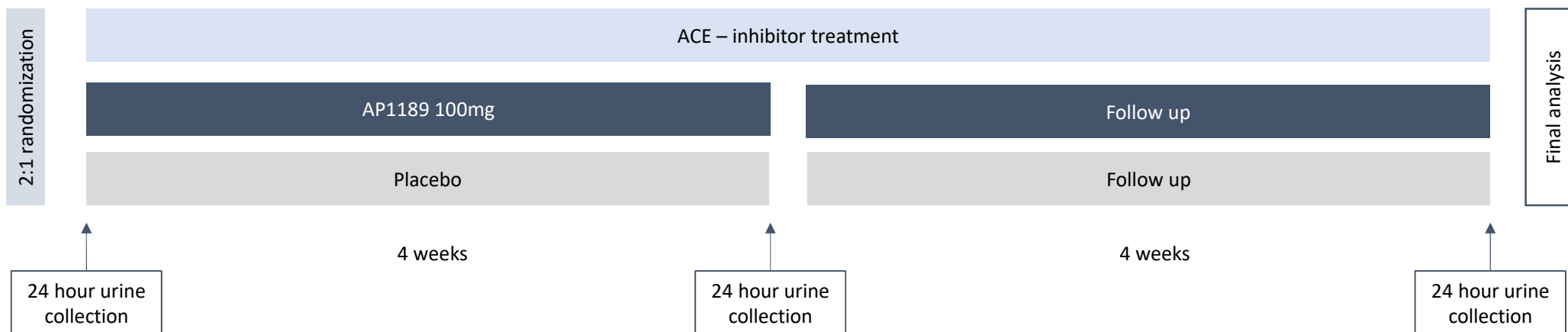
AP1189 promotes inflammatory resolution and has no immunosuppressive effects, making it more suitable for 1st line treatment and providing more pharmacoeconomic benefit compared to corticosteroids and other immunosuppressive therapies

AP1189 Shows Benefits in Models of Nephritis



*p<0.05 vs. Day 14; † p<0.05 vs. vehicle; ‡ p<0.01 vs. ACTH; data from EP18179319.1 (non-published data); Lindskog et al, J Am Soc Nephrol. 2010; 21:1290-1298

AP1189 – Phase IIa Trial in Nephrotic Syndrome



Key inclusion criteria:

- Moderate-to-severe nephrotic syndrome
- Patients on stable dose of ACE inhibitors
- Patients are experiencing controlled blood pressure yet continued proteinuria

Primary endpoint: Change in 24 hour protein excretion following 4 weeks of treatment relative to baseline compared to placebo

Secondary endpoints include:

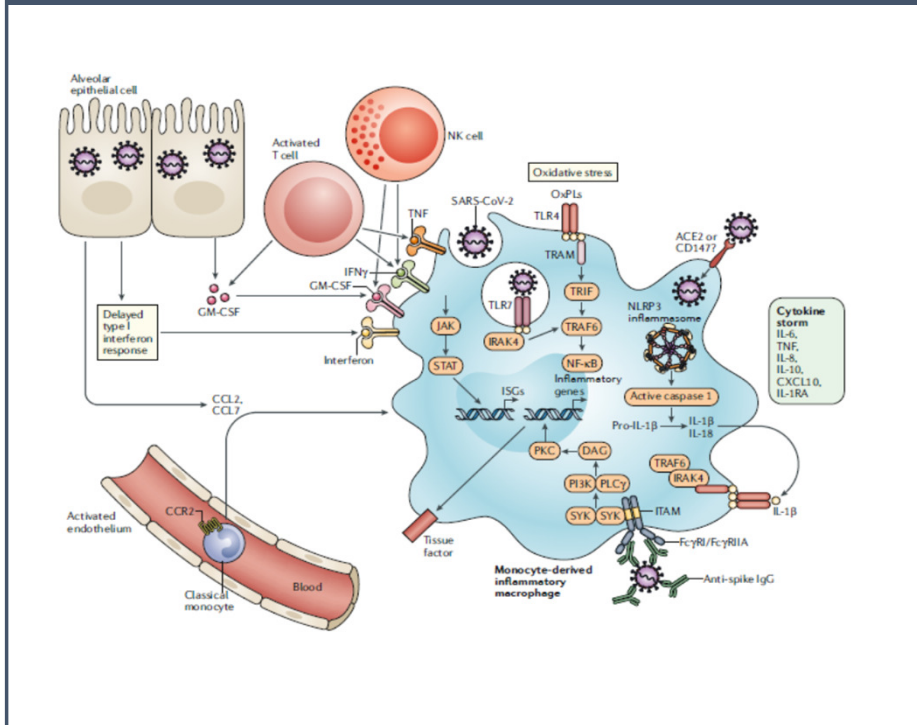
- Change in 24 hour albumin excretion following 4 weeks of treatment relative to baseline compared to placebo
- Change in plasma albumin from baseline to the end of the four week treatment period
- The number of subjects who show partial or complete remission in proteinuria on the last day of treatment and four weeks after the last dose is administered



AP1189 – COVID-19

Patients at risk of developing Acute Respiratory Distress Syndrome (ARDS)

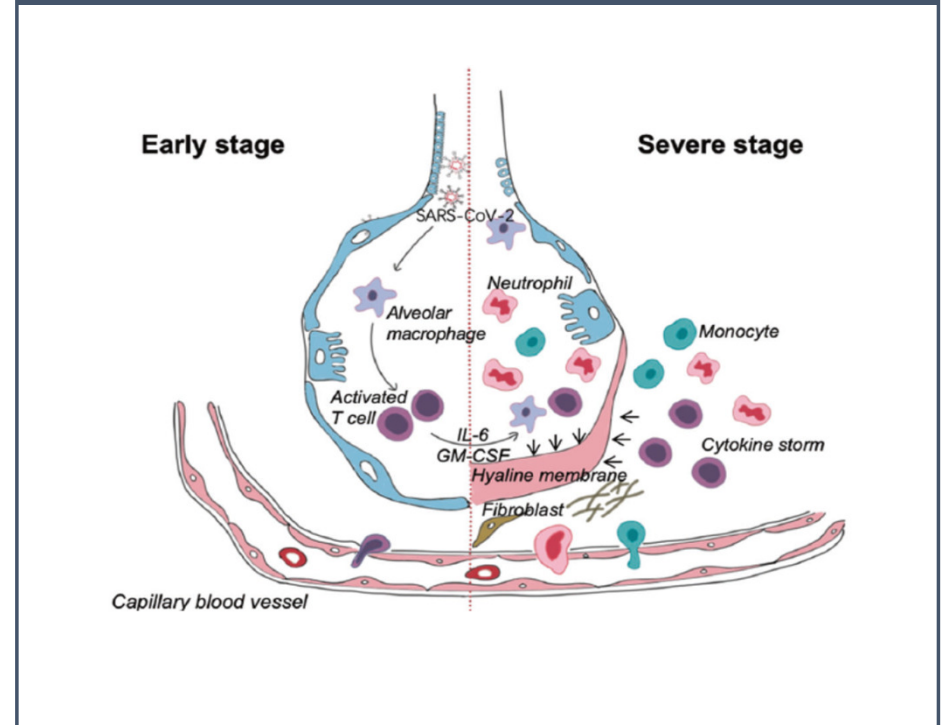
Macrophages play a role in COVID-19 hyper-inflammation



COVID-19 infection is associated with severe pneumonia that if left untreated can develop into ARDS due to an exacerbated inflammatory response

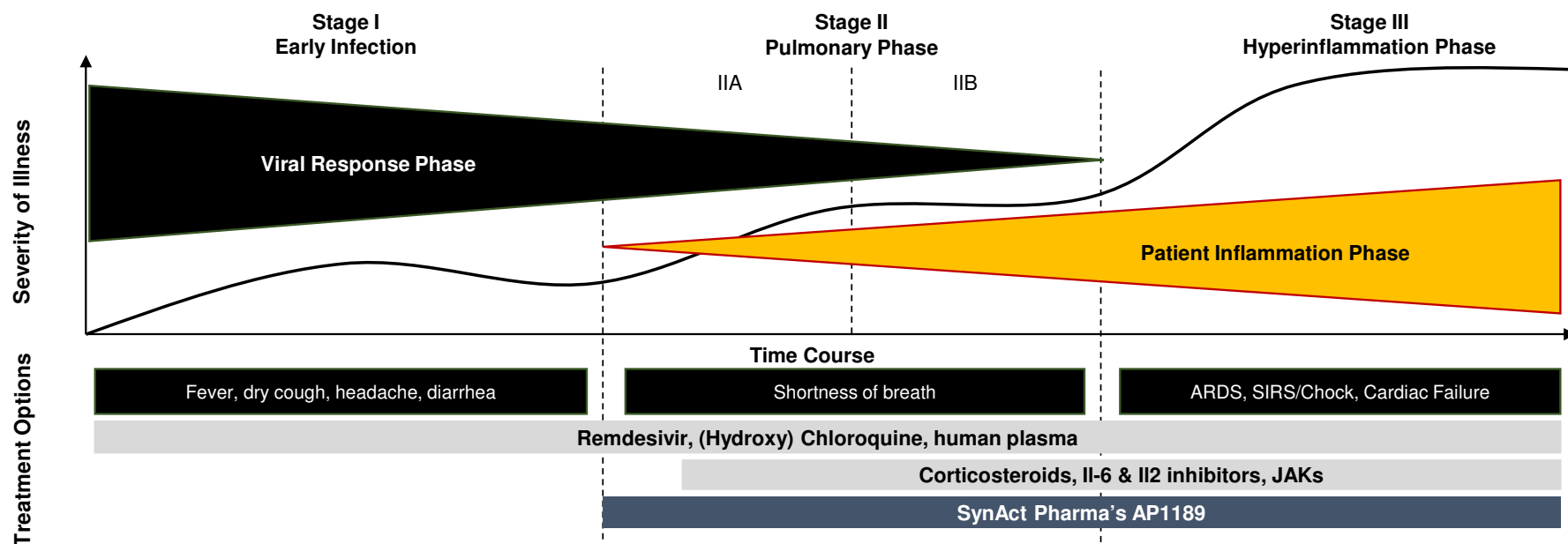
Hyperactivation of monocyte-derived macrophages is a key event leading to development of life-threatening ARDS

AP1189 targets key pathways in hyper-inflammation



AP1189 induces inflammatory resolution by reducing pro-inflammatory pathways

Shifts the phenotype of macrophages from pro-inflammatory type 1 to a type 2 phenotype with marked pro-resolving capabilities



AP1189's anti-inflammatory properties provide strong rationale to explore its potential utilization in COVID-19 infections

AP1189 as an add-on therapy in COVID-19 infected patients



Key inclusion criteria:

- Positive COVID-19 infection
- Need for supportive respiratory assist¹

Primary endpoint: Time to respiratory recovery defined as the time from initiation of treatment to the time when the patient's SpO₂ is $\geq 93\%$ determined by pulse oximetry in the patient on ambient air for a minimum of 30 minutes

Key secondary endpoints:

- Rate of ICU admission during the treatment period
- Rate of patients that go to mechanical ventilation at any time during hospitalization
- Rate of patients discharged at Day 14 or before
- Rate of mortality at Day 28
- Length of hospitalization
- Length of stay in the ICU
- Number of supplementary oxygen-free days on Day 28

1. Defined as either SpO₂ < 93% without supportive oxygen treatment or PaO₂/ FiO₂ <300 mmHg despite supportive oxygen treatment



Summary



Investment highlights

Focus on developing a novel treatment concept for inflammatory and autoimmune diseases by targeting the melanocortin system

High unmet need in inflammatory diseases for therapeutics that can spare the use of immunomodulatory agents due to their poor side effect profile

Lead asset, AP1189, currently in three separate Phase II trials for various indications with inflammatory manifestations, including orphan diseases

Several near-term value inflection points from Phase II data in rheumatoid arthritis, nephrotic syndrome and COVID-19-induced ARDS

Management with strong track record in clinical development as well as global business development and a supervisory board with decades of experience in research

Continually evaluating compelling business development opportunities

Expected news flow



- | | |
|---------|---|
| Q4 2020 | <ul style="list-style-type: none"> ▪ Interim Phase IIa data Part 1 RA ▪ Initiation of Phase IIa Part 2 RA |
| Q1 2021 | <ul style="list-style-type: none"> ▪ Reporting of Phase IIa, Part 1 data in COVID-19-induced ARDS |
| Q2 2021 | <ul style="list-style-type: none"> ▪ Phase IIa RA study completion ▪ Phase IIa COVID-19-induced ARDS study completion |
| H2 2021 | <ul style="list-style-type: none"> ▪ End of Phase IIa meeting RA ▪ Completion date Phase IIa in Nephrotic Syndrome |
| H1 2022 | <ul style="list-style-type: none"> ▪ End of Phase IIa meeting Nephrotic Syndrome |

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