BioArctic AB

Company presentation

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RedEye CNS Event, October 4, 2018

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Helping Patients with Disorders in the Central Nervous System by Developing Innovative Treatments

Alzheimer's Disease

Parkinson's Disease

Complete Spinal Cord Injury

Three key areas with high unmet medical needs – all lacking effective treatments today

Disease modifying treatment in Alzheimer's and Parkinson's Disease – areas with huge and growing markets due to aging populations

BAN2401 Phase 2b study in early AD in collaboration with Eisai – first late stage study demonstrating potential disease modifying effect on both cognition and biomarkers

BAN0805 for PD in collaboration with AbbVie – preparing for clinical development and IND in the U.S.

Unique regenerative treatment for patients with Complete Spinal Cord Injuries in Phase 1/2

Attractive combination of fully financed partner projects and innovative pipeline with substantial market and out-licensing potential

Strong science based research and highly educated engaged teams with vast experience in drug development and great track record of high quality deliverables

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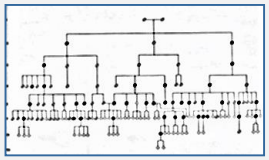
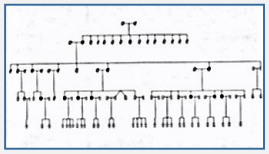
Long History of Research Achievements Within Disorders of the Central Nervous System (CNS)

Background to founding

- Scientific discoveries by Professor Lars Lannfelt laid the foundation for BioArctic
- **The Swedish mutation** demonstrated for the first time in a clinical setting that amyloid-beta (Aβ) peptide initiates the disease



- **The Arctic mutation** revealed that soluble aggregated forms of Aβ, oligomers and protofibrils, are toxic and likely driving the disease



Company history

2003
BioArctic founded

2004–2006
- mAb158 isolated
- New transgenic mouse model for AD developed
- Several AD patents filed
- BioArctic and Eisai entered research collaboration in AD

2007–2009
- BioArctic and Eisai entered partnership on BAN2401
- SC0806 program initiated at BioArctic
- PD program initiated

2010–2012
- BAN2401 entered clinical development for AD
- PD Alpha-synuclein mAb patent filed
- SC0806 orphan drug designation in EU & US
- Vinnova grants

2013–2015
- BAN2401 entered Phase 2b
- BAN2401 back-up candidate out-licensed
- Extended research collaboration with Eisai
- BAN0805 in preclinical development for PD
- SC0806 entered clinical development
- Horizon 2020 grants
- Vinnova grants

2016–Today
- **BAN2401 Ph 2b study - Positive results presented by Eisai July 2018**
- **BioArctic and AbbVie entered research collaboration in PD**
- **BAN0805 in prep for US IND**
- **SC0806 in Ph 1/2**
- **SCI Horizon 2020 expansion**
- **Vinnova grants**
- **Patent portfolio expanded**
- **Listed on Nasdaq Stockholm Mid Cap**

Partnerships & research collaborations: Eisai, Eisai, Eisai, Eisai, Eisai abbvie

Soft money funding: VINNOVA, VINNOVA, Horizon 2020, Horizon 2020, VINNOVA

Source: Company data

Successful collaborations with pharmaceutical industry validating potential value and commercialization potential for BioArctic

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Long-standing and Extensive Partnerships

Eisai collaboration and license agreements Alzheimer's Disease

Description of agreements

- Two research collaborations – disease modifying therapies for AD – resulted in two licenses for Aβ oligomer/protofibril antibodies: BAN2401 and BAN2401 Back-up
- Third research collaboration – new target as a disease modifying therapy for AD

Milestone / royalty potential

- Total aggregated value of the research collaborations and license agreements is approx. EUR 218m in signing fee and milestones, plus high single digit royalties
- BioArctic has received approx. EUR 47m for the research collaborations, signing fees and milestones

AbbVie collaboration agreement Parkinson's Disease

Description of agreements

- Research collaboration – alpha-synuclein antibodies as disease modifying therapies for PD incl. BAN0805 to IND, follow-up compounds and diagnostic
- Option for AbbVie for a license to develop and commercialize the antibodies

Milestone / royalty potential

- Total potential value of the agreement is up to USD 755m incl. an up-front fee, option exercise fee, and success-based milestones plus tiered royalties
- BioArctic has received an USD 80m up-front payment for the research collaboration

Strategic collaborations with pharmaceutical industry validating potential value and commercialization potential for BioArctic with proven track record of delivering on research collaborations

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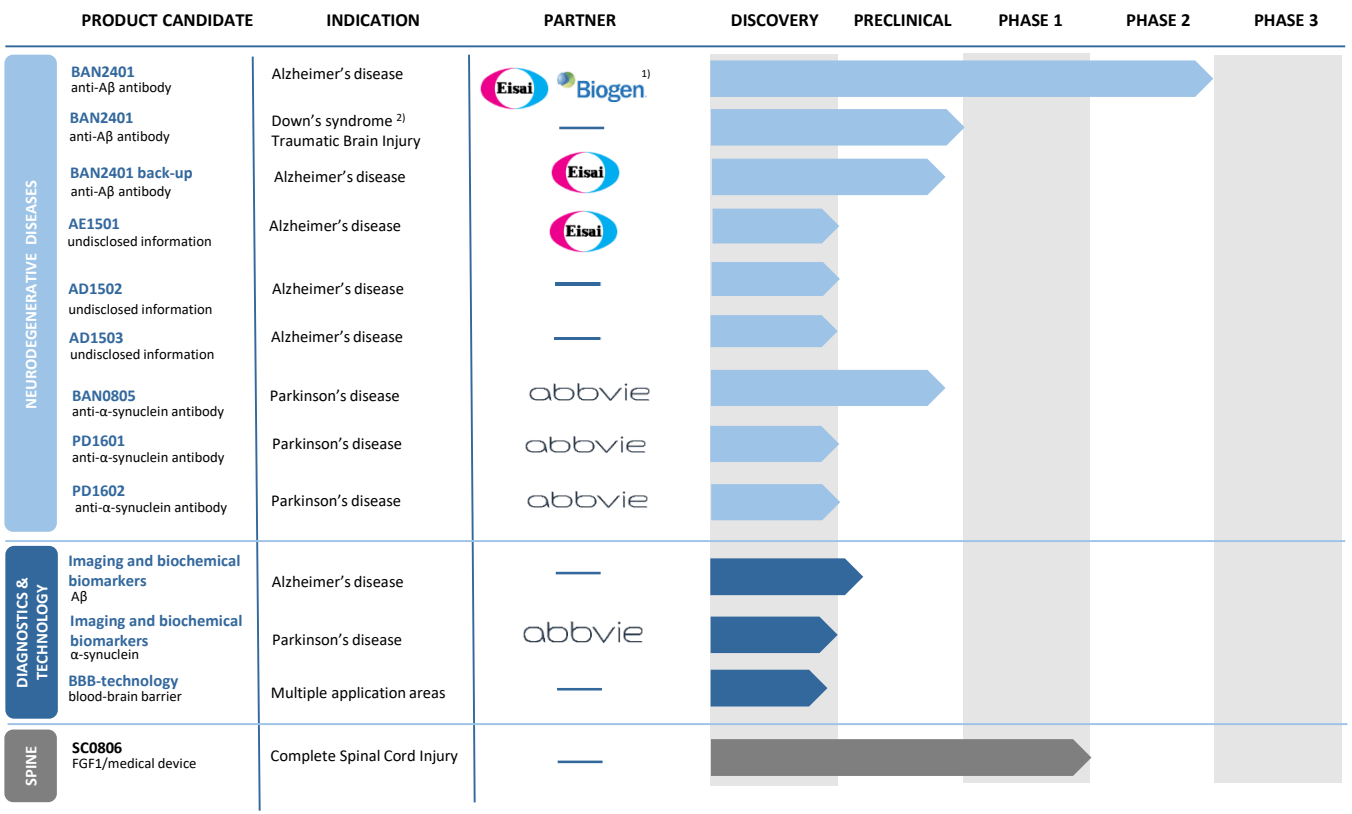
Strategic Partnerships and Cutting-Edge Proprietary R&D

per June 30, 2018



1) Partner with Eisai on BAN2401 for treatment of AD. Since 2014, Eisai partnered with Biogen in AD
2) Dementia and cognitive impairment associated with Down's syndrome and Traumatic Brain Injury

Source: company data

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BAN2401 – Learnings from Previous Clinical Trials in AD Incorporated in Phase 2b Study Design
Positive 18 Month Results reported in July 2018

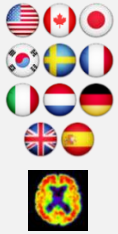
Important parameters

Right target	Right patient population	Right dose & exposure	Right measurements	Right safety
• Address the soluble protofibrils – a toxic form of amyloid	• Early AD – MCI due to AD & Mild AD • Identify right patients – biomarkers	• Selecting doses with exposures above preclinical IC50 • Adaptive design testing several doses and dose regimens	• More sensitive cognition scales • Biomarkers for disease progression and disease modification	• Well tolerated with a benign safety profile • Low cardiovascular risks and amyloid related imaging abnormalities (ARIA) etc.

Phase 2b study design

Patient inclusion

Multinational recruitment:
- 100 clinical centers included
- **Inclusion criteria:** MMSE >22-30
- Stable concomitant medication
- Positive amyloid PET/CSF



Inclusion completed with 856 patients

Treatment 12 months

Double-blind, placebo controlled, parallel-group study with Bayesian adaptive design

- Placebo
- 2.5 mg/kg bi-weekly
- 5 mg/kg bi-weekly
- 10 mg/kg bi-weekly
- 5 mg/kg once every four weeks
- 10 mg/kg once every four weeks

Primary analyses:
- Δ from baseline in ADCOMS at 12 months
- Safety and tolerability

Treatment 18 months

Key analyses:
- Δ from baseline in ADCOMS, CDR-SB, ADAS-cog at 18 months
- Δ from baseline in brain amyloid as measured by amyloid PET
- Δ from baseline in CSF biomarker and MRI (total hippocampal volume
- Safety and tolerability

BAN2401 18 months treatment demonstrated an effect on both cognition and biomarkers with a good tolerability profile

Completion of study after 18 months treatment and 3 months follow-up - Q4 2018

Source: Company information
Note: ADCOMS = Alzheimer's Disease Composite Score, an evaluation tool developed by Eisai

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BAN2401 Showed Effect on Clinical Parameters and Biomarkers with Good Tolerability in Early AD Patients - I

Clinical effect:
- ADCOMS
- ADAS-Cog
- CDR-SB

- **ADCOMS,** cognition scale (the key efficacy parameter) showed statistically significant slower decline of 30% (p=0.034) with 10 mg/kg twice a month (highest dose) at 18 months
- ADCOMS showed effect already at 6 months – as well as after 12 and 18 months treatment – with the highest dose
- **ADAS-Cog** (well-known cognition scale) showed statistically significant slower decline of 47% (p=0.017) with 10 mg/kg twice a month at 18 months
- **CDR-SB** (cognition and function scale) showed slower decline of 26% (p>0.05) with 10 mg/kg twice a month at 18 months

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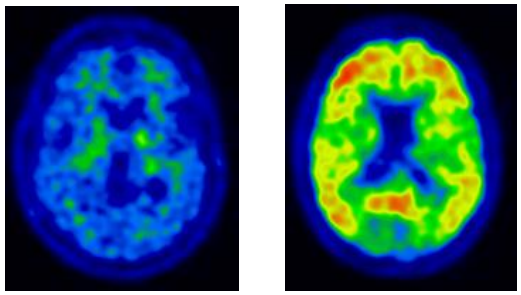
BAN2401 Showed Effect on Clinical Parameters and Biomarkers with Good Tolerability in Early AD Patients - II

Biomarkers:
- Amyloid PET
- CSF Abeta, t-tau

- **Amyloid PET:** BAN2401 reduced brain amyloid-beta dose-dependent and statistically significant, amyloid decreased ~70 units (from 74.5 at baseline to 5.5 at 18 months for the top dose) with Centiloid scale ($p<0.0001$)
- Amyloid PET visual read showed dose-dependent and statistically significant improvements and 81% of the patients in the BAN2401 top dose converted from amyloid positive to amyloid negative
- **CSF:** Abeta increased dose-dependent and statistically significant and t-tau decreased for the two top doses
- Biomarkers support a disease modifying effect of BAN2401



Brain images provided by PET-Centre, Uppsala University Hospital, Sweden, showing a normal brain (left) and an Alzheimer brain (right).
The images are illustrative examples of PET scans and are not images from the BAN2401 Phase 2b study.

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BAN2401 Showed Effect on Clinical Parameters and Biomarkers with Good Tolerability in Early AD Patients - III

Safety & tolerability

- BAN2401 was **well-tolerated** with infusion reactions and ARIA as the most common side effects (mostly mild to moderate)
- ARIA-E incidence:
  - <10% at any dose
  - <15% in APOE4 carriers at the highest dose
  - ~90% of ARIA-E cases were asymptomatic

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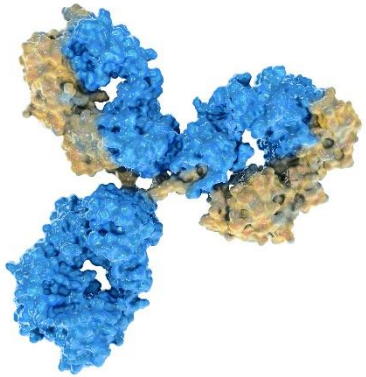
BAN2401 – Next Steps

- Eisai is currently preparing for interactions with regulatory agencies regarding the future BAN2401 program
- Further analyses are on-going and will be presented by Eisai at CTAD (11th Clinical Trials on Alzheimer's Disease) on Oct 24-27, 2018 in Barcelona, Spain
- The study will be completed in Q4 2018 and includes a further 3 months follow-up after completion of 18 months of treatment (at 21 months)



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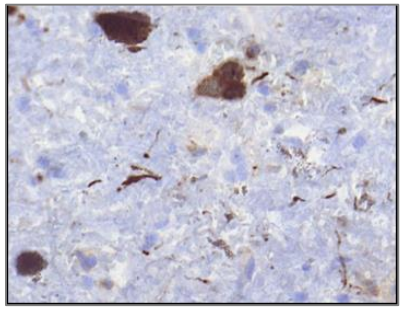
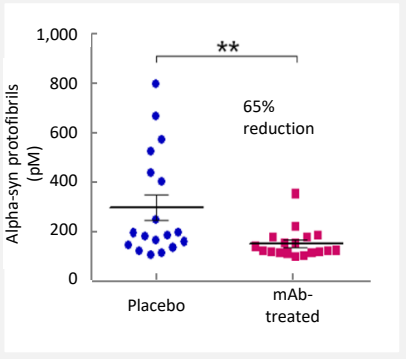
BAN0805 – Groundbreaking Disease Modifying Drug in PD with Rationale for Selective Targeting of Alpha-synuclein Oligomers/ Protofibrils

Rationale for targeting alpha-synuclein

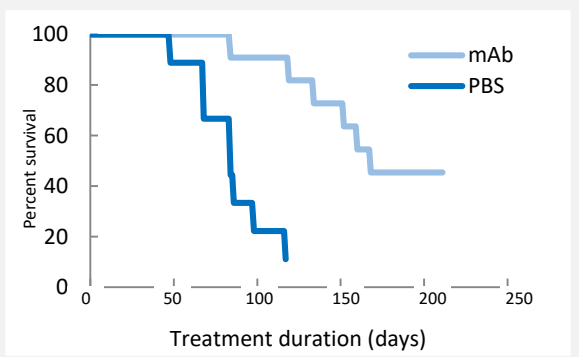
Human genetics | Pathology | Pre-clinical proof of concept



Reduction of neurotoxic alpha-synuclein oligomers/protofibrils



Increases lifespan



Alpha-synuclein mutations lead to PD or Dementia with Lewy Bodies and are associated with increased oligomer/protofibril formation

Alpha-synuclein deposition is a hallmark of PD pathophysiology and alpha-synuclein oligomers/protofibrils are elevated in PD

Oligomer/protofibril selective antibody reduces neurotoxic alpha-synuclein oligomer/protofibril levels, delays disease progression and increases life-span in a PD mice model

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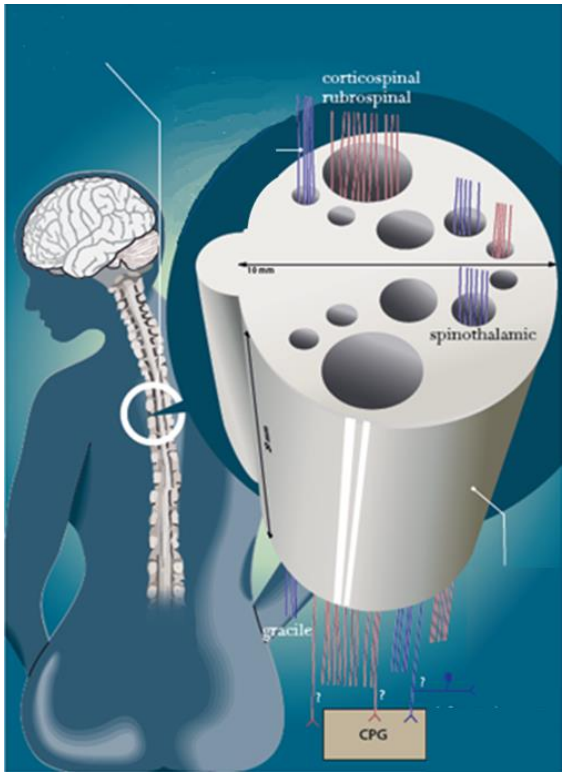
SC0806 – Unique Regenerative Treatment of Complete SCI

SC0806 – Regenerative Treatment of Complete SCI

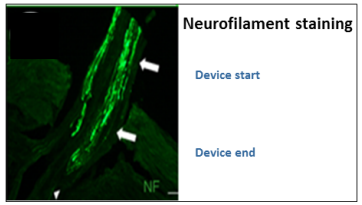


Treatment Rationale

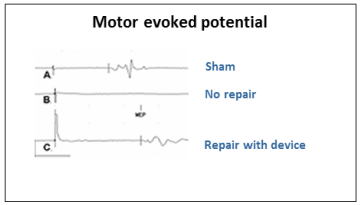
SC0806 makes nerve regeneration possible

FGF1 activated by heparin	• Stimulation of central axon outgrowth • Decreases gliosis
Peripheral nerve autografts	• Optimal regeneration environment
Biodegradable device	• Provides sustained release of FGF1 • Positioning of nerve grafts from white to gray matter

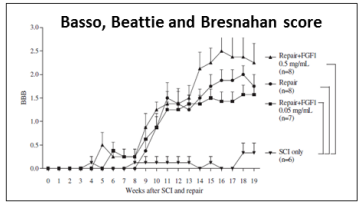
Nerve regeneration



Electrophysiology restored



Motor function improved



Preclinical Proof of Concept shown in rats

- Rat experiments demonstrate nerve regeneration, restored electrophysiology and motor function
- The motor evoked potential (MEP) has been restored in rats with resected spinal cords

Source: Nordblom et al. Restorative Neurology and Neuroscience 30 (2012) 91–102

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SC0806 – Unique Regenerative Treatment of Complete SCI

The Lokomat™ used in the Rehabilitation

Project Status

- Clinical Phase 1/2 trial ongoing with SC0806 in patients with Complete Spinal Cord Injury
  - Surgery in Sweden
  - Rehabilitation 18 months with Lokomat™ in Sweden, Estonia, Finland and Norway
  - Patients receiving SC0806 treatment are given the option of 12 months additional participation in an extension study
  - 9 patients included in Panel A (6 treated with SC0806 and 3 control patients)
  - Interim analysis planned Q4 2019/Q1 2020
- Orphan Drug designation in US and EU – granting 7 and 10 years exclusivity, respectively
- EU Horizon 2020 research and innovative program Grant Agreement No. 643853 of MEUR 6.4

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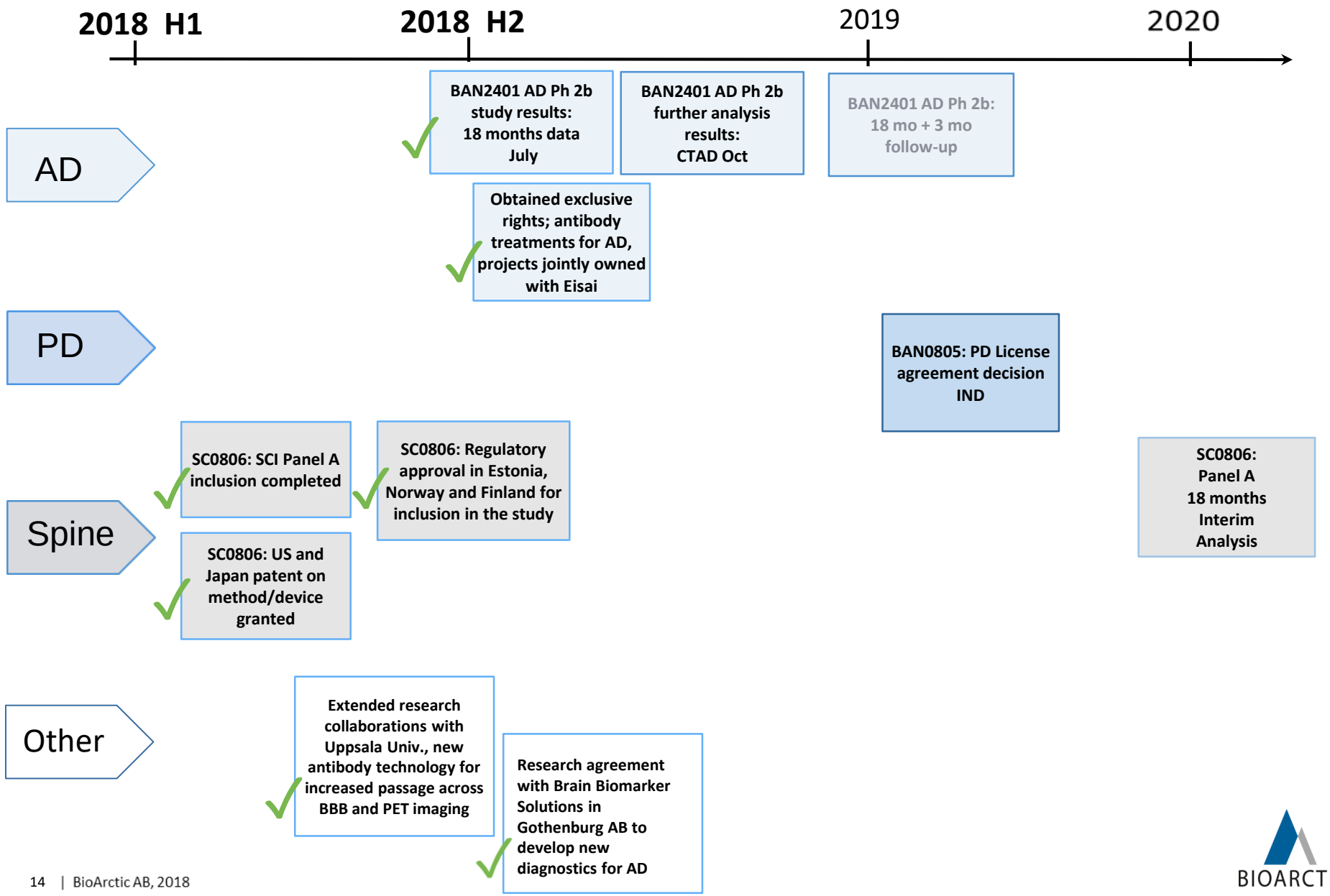
Recent & Anticipated News Flow



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Gunilla Osswald, PhD, CEO

IR

- **STO:BIOA B**
  BioArctic's B-share is listed on Nasdaq Stockholm Mid Cap
- **Next report**
  Q3 November 8, 2018
- **IR contact**
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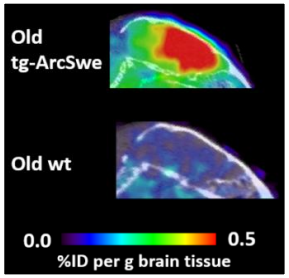
Several Novel Approaches to Improve Diagnostics and Treatment

Imaging and biochemical biomarkers in AD

Aβ protofibril PET tracer

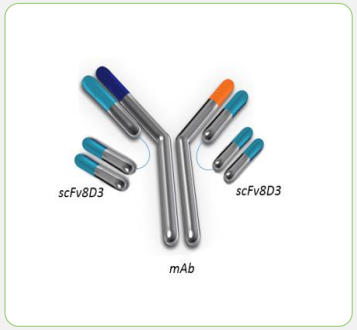


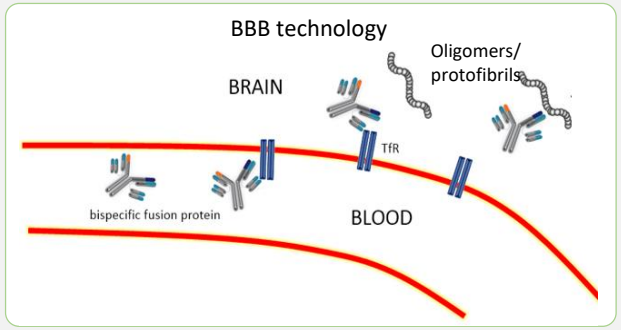
- PET with an antibody-based ligand
- Binding to Aβ oligomers/protofibrils
- Has short half-life
- Improved BBB penetration

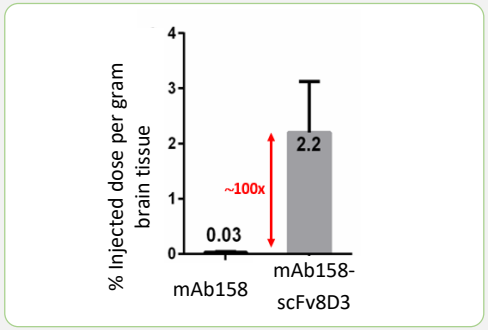
Aβ protofibril biochemical biomarker

- Sensitive biochemical method for Aβ measurement in development is of great clinical importance

Blood-brain barrier technology







Source: Sehlin et al 2016 Nature Communications. Hultqvist et al 2017, Theranostics.

Substantially increased antibody brain uptake by BioArctic´s brain shuttle technology

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