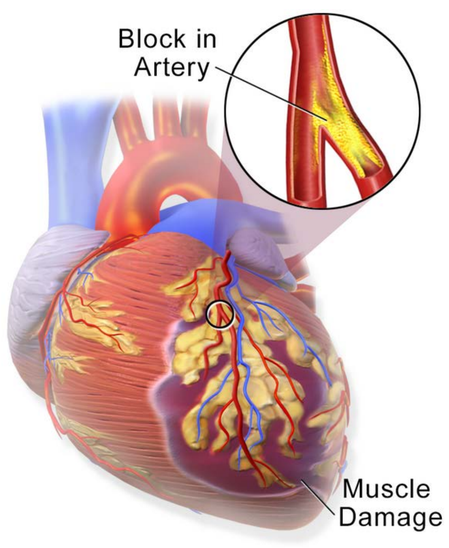
Novel peptide based treatment for cardiac arrhythmias

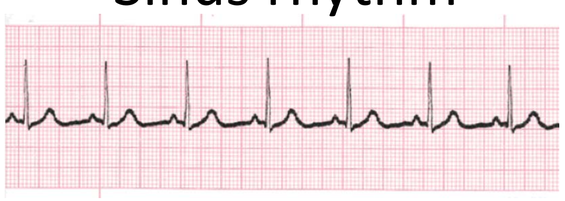
Biotech & Pharma

Novel target and MoA for anti-arrhythmic drugs

Myocardial infarction increases the risk of life-threatening arrhythmia

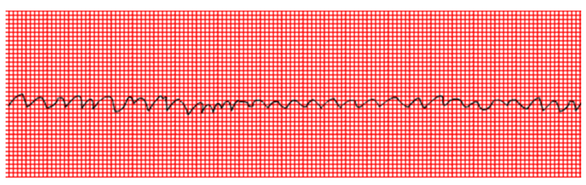


Sinus rhythm

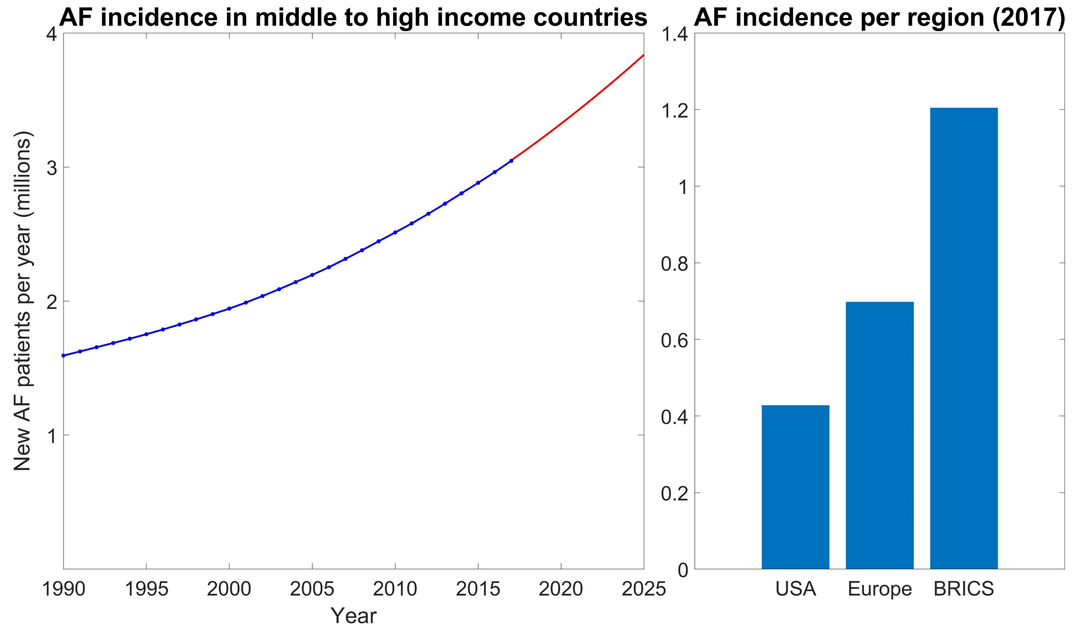


NPY3-35

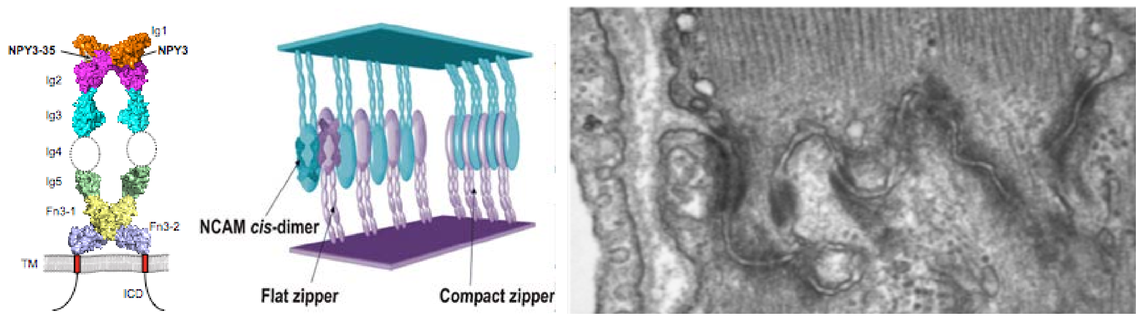
Ventricular fibrillation



New indication - Cardioversion of atrial fibrillation



NPY3-35 acts on NCAM - an intercalated disc structural protein



Selected current treatments

Treatment	Efficacy	Pro-arrhythmia	Price (DKK)	Adverse effects
DC conversion	70-90%		9500	+
Vernakalant	47-70%	-	4072	+
Amiodarone	30-70%	-/(+)	500	+
Ibutilide	31-51%	+	1777	+
NPY3-35 derivative	High	-	4000	-

Technology Description

Cardiac arrhythmia, e.g. atrial fibrillation, can be a serious life-threatening condition. Current anti-arrhythmic drugs that target ion channels or G-protein coupled receptors, are often associated with troublesome side effects. We have discovered that NPY3-35, an endogenous metabolite of neuropeptide Y (NPY) previously believed to be without biological effect, can induce significant anti-arrhythmic effect by interacting with NCAM in the intercalated disc (IC) connecting cardiomyocytes. The IC is central for proper cardiac activation and NCAM has not previously been identified as an anti-arrhythmic target. This makes our technology unique compared with existing drugs on the market.

Intellectual Property Rights

Patent application filed with priority date 29 Nov 2018 (“The use of NPY3-35 and other fragments of NPY for treating cardiovascular diseases”) by UCPH. Currently in PCT phase.
An Extended European Search Report (EESR) from EPO on 21st of May 2019 concludes that: “the subject matter of the claims for use of these peptides in the treatment of cardiac arrhythmia is new”

Team

Associate professor
Morten Schak Nielsen
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Current State

In vitro proof-of-concept has been provided showing anti-arrhythmic effects in the setting of ischemia-reperfusion. Mouse and rat data show that NPY3-35 increases conduction velocity in an NCAM-dependent manner.
Next step will be to develop novel NPY3-35-related peptides with increased affinity/efficacy and to broaden the indications for the technology to atrial fibrillation and orphan arrhythmogenic diseases.

Business opportunity and Call to action

We seek

- Collaboration for development of novel peptides with improved NCAM affinity, better stability and novel composition-of-matter IPR.
- Soft-funding for Proof-of-Concept in atrial fibrillation and orphan arrhythmogenic diseases (~2 million DKK from primo 2021)
- Partners for business development and company formation including a CEO as co-founder and members for an advisory board

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