



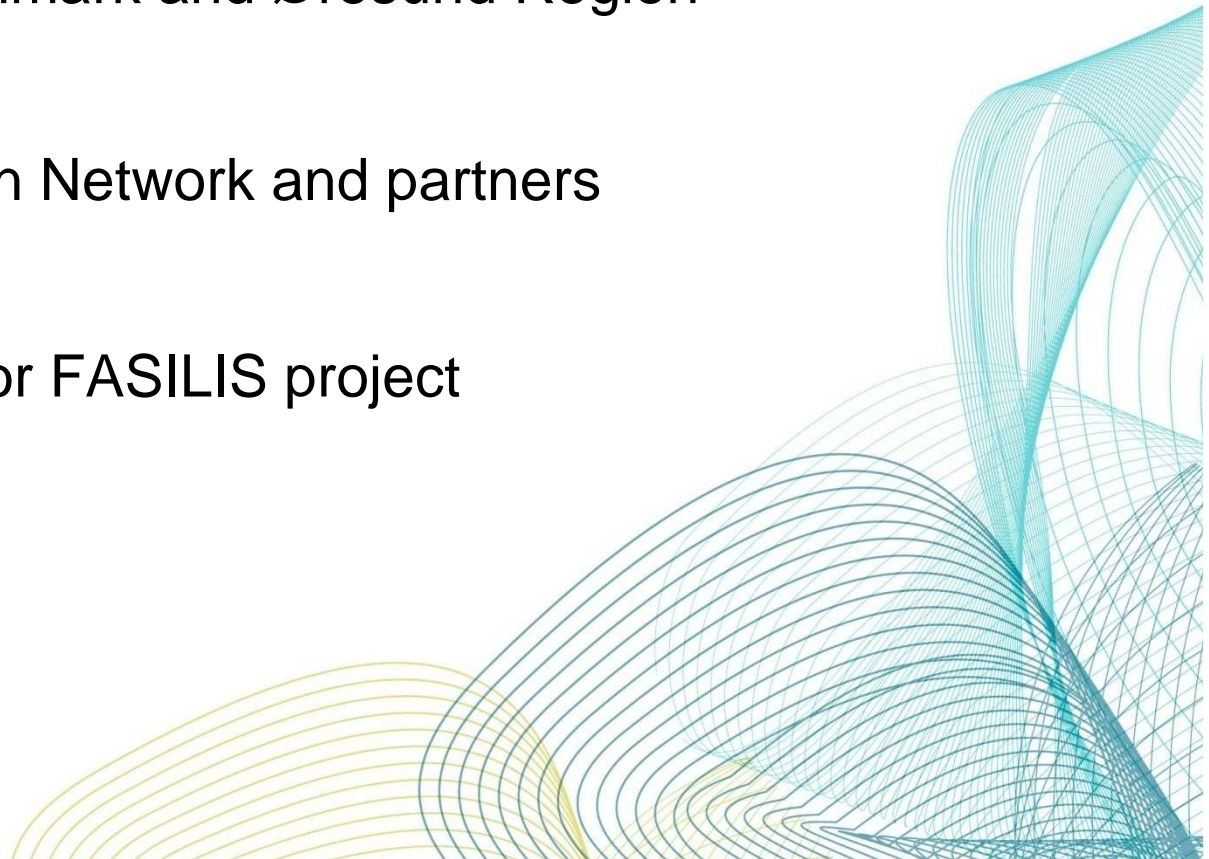
# FASILIS in Denmark

Facilities for Life Science SMEs  
Denmark and Øresund Region

David Featherston  
Science Liaison Officer

## Overview

- Life Sciences in Denmark and Øresund Region
- Biopeople Innovation Network and partners
- Selected Facilities for FASILIS project



## Life Sciences in Denmark and Øresund Region

- Three main R&D clusters
  - Medical Technology
  - Pharmaceuticals
  - Biotechnology
- Four main geographic areas of business excellence



## Denmark – 4 main geographic areas



### Copenhagen

- 75% of activities
- medtech, biotech, pharma

### Odense

- 6% - medtech & biotech

### Aarhus

- 13% - all

### Aalborg

- 6% - medtech & biotech

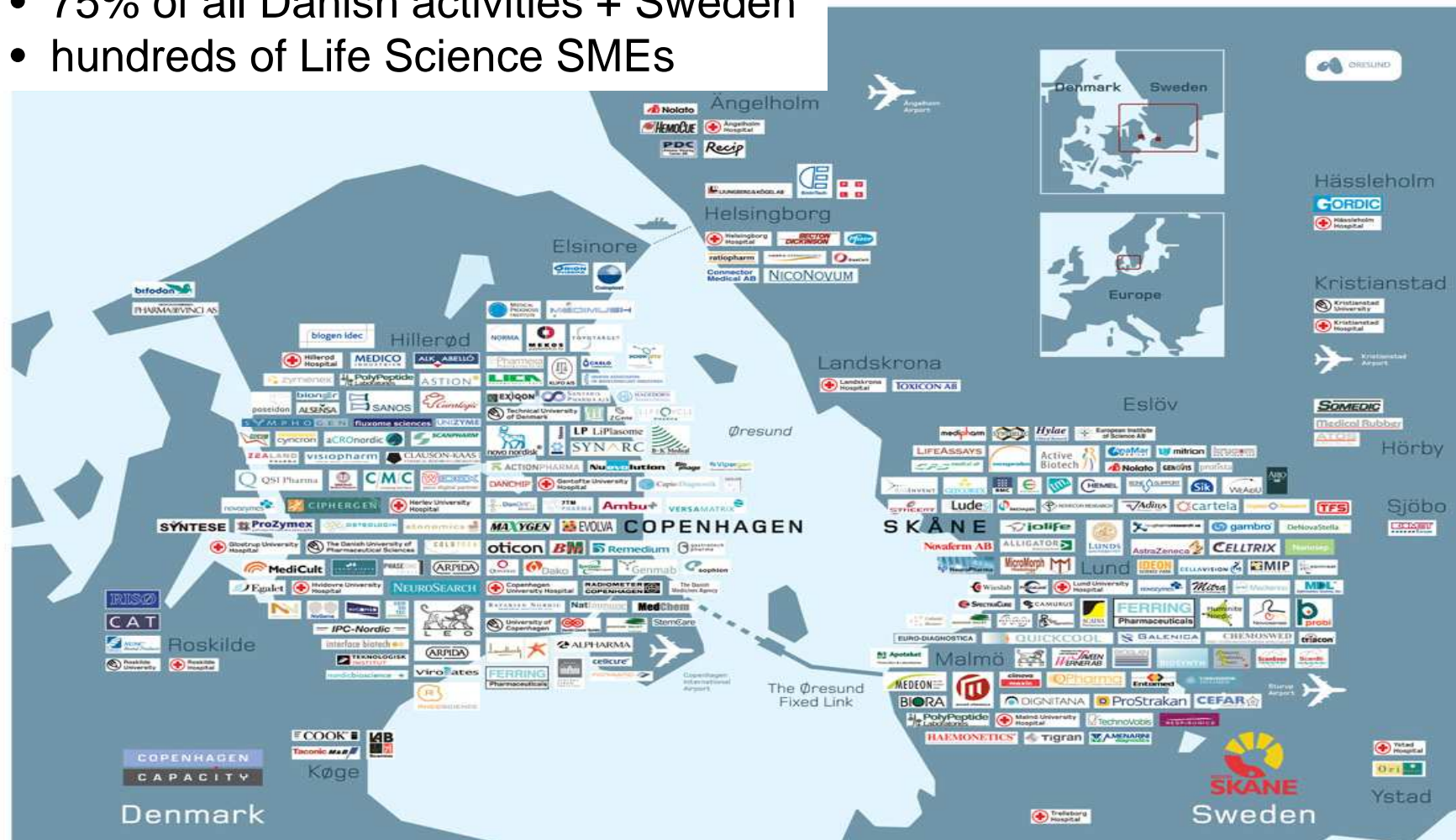


**BIO  
PEOPLE**

Biotech MedTech Pharma

## Copenhagen + Øresund Region

- 75% of all Danish activities + Sweden
- hundreds of Life Science SMEs



## Copenhagen + Øresund Region – Basic facts & figures

Population: 3.5 million

155,000 students (a third in life-sciences)

44,000 life-science employees in the private sector

9 science parks

11 universities (5 supply life-science educations)

34 hospitals (of which 11 are university hospitals)

6 large R&D based pharma companies with local roots

> 150 biotech companies with own R&D / production

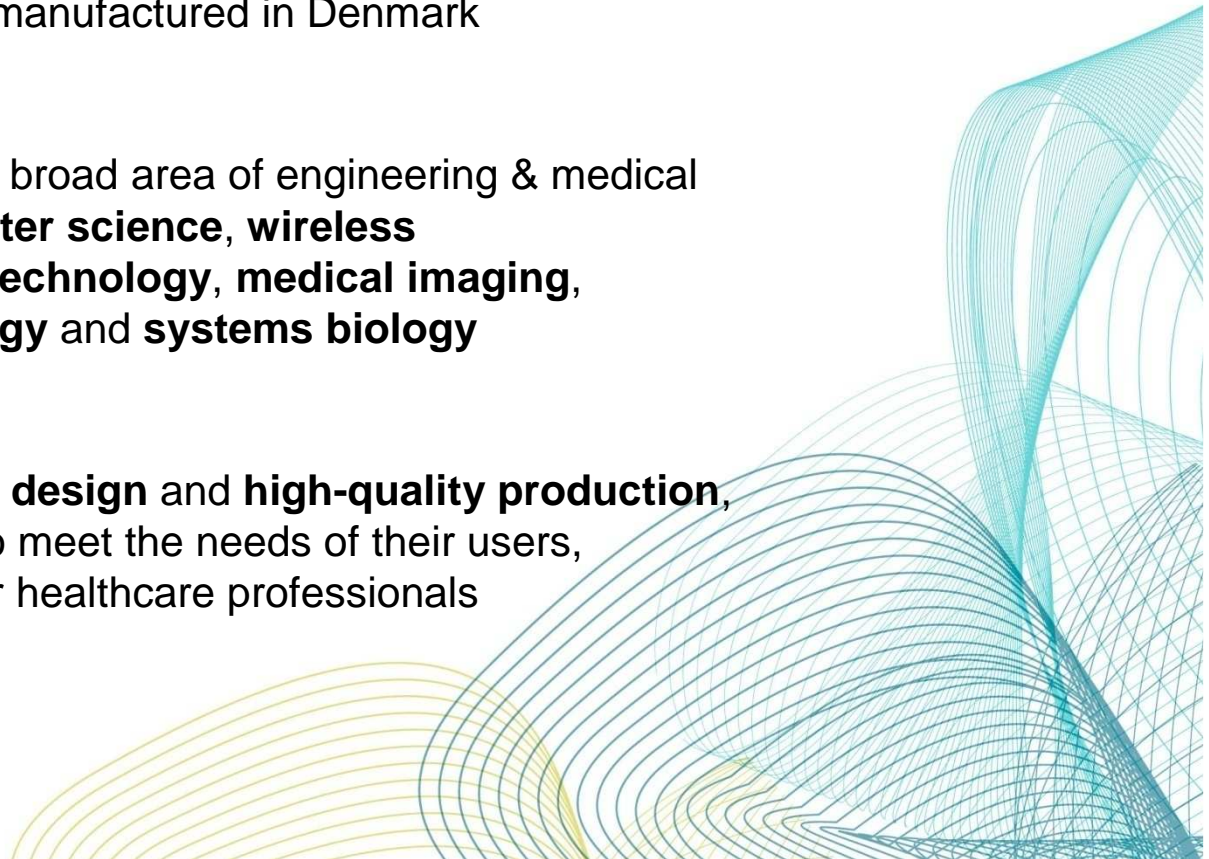
> 200 medtech companies with own R&D / production

> 50 CROs and CMOs

More than a dozen VCs with experienced life-science teams

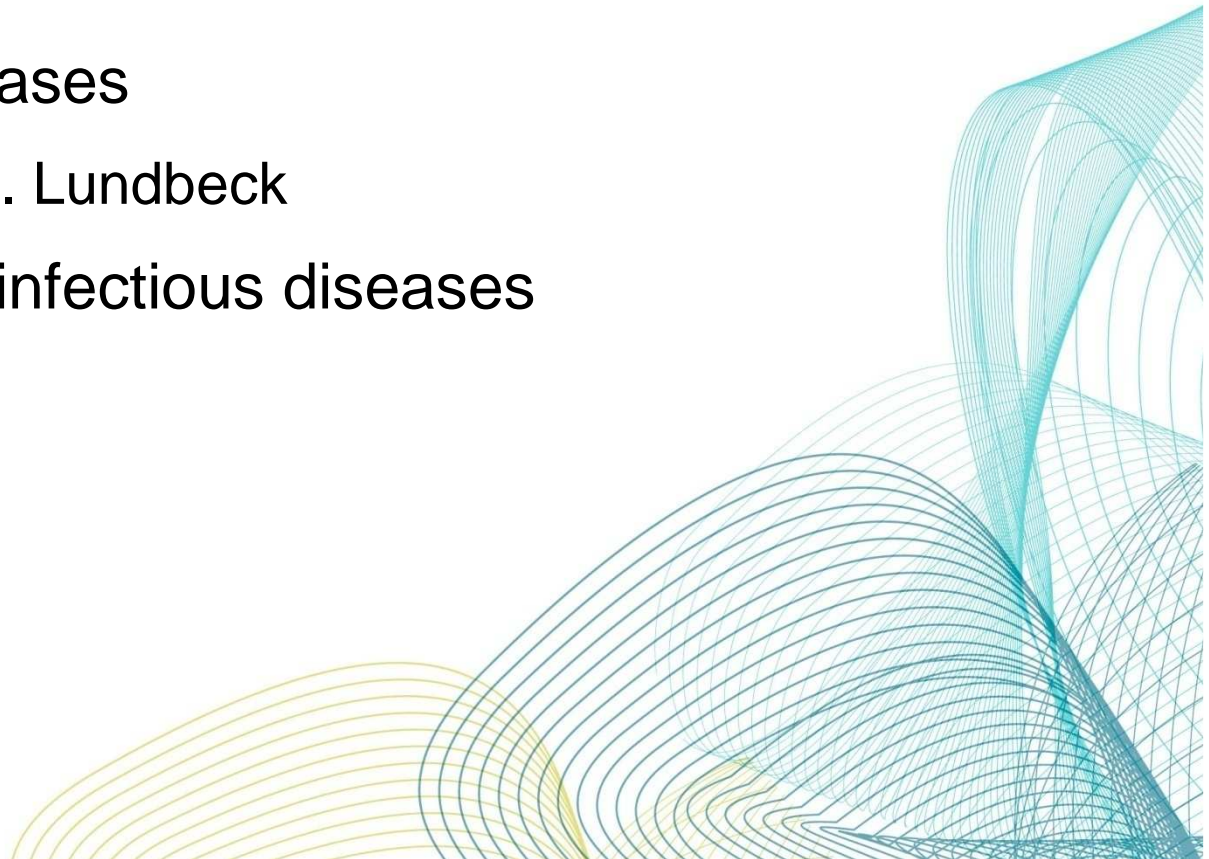
## Medical Technologies

- Assistive technologies
  - **Functionality, high-quality and user-friendliness** characterize the devices designed and manufactured in Denmark
- Diagnostics
  - Strong capabilities within a broad area of engineering & medical disciplines such as **computer science, wireless communication, sensor technology, medical imaging, chemistry, nanotechnology** and **systems biology**
- Disposables
  - Charaterized by **innovative design** and **high-quality production**, disposables are designed to meet the needs of their users, whether they are patients or healthcare professionals



## Pharmaceuticals

- Diabetes & Obesity
  - Novo Nordisk
- Neurological diseases
  - NeuroSearch, H. Lundbeck
- Immunological & infectious diseases
  - Leo Pharma
- Cancer
- Cardiovascular



## Biotechnology

- Red Biotechnology
  - Clinical Trials
  - Personalized Medicines
  - Biomedical Informatics
  - Nanotechnology
  - Proteomics
  - Drug Delivery
- White Biotechnology
- Green Biotechnology



## Unique Selling Points for Denmark

- Medical Devices
  - User-oriented design and high-quality production
- Pharmaceuticals
  - Foundation-owned world-class pharmaceutical companies
- Biotechnology
  - Carlsberg
  - Long history of public-private partnerships

**Innovation through cross-disciplinary collaboration**



## Biopeople Danish Biohealth Innovation Network

- Focus on **bioinformatics, clinical research, animal models, biobanks, biomarkers, & bioimaging** as *enabling technologies*
- Function **across disease therapies** and connect red, white, and green biotech with **cross-disciplinary initiatives**
- Enable and broker **public-private partnerships**

**Partners with industry / industry associations, academia, & regulators in Denmark**

Project partners in Sweden, The Netherlands, Belgium, Germany, England, Israel, Spain, Austria, Estonia ...



# Biopeople

## Danish Biohealth Innovation Network

### Face to Face Matchmaking Activities

- Science Dating & Funding Matchmaking
- Biotech Partnering Missions
- Conferences and Symposia
- Collaborative project / pilot project brokering & funding
- Courses and training collaboration programmes

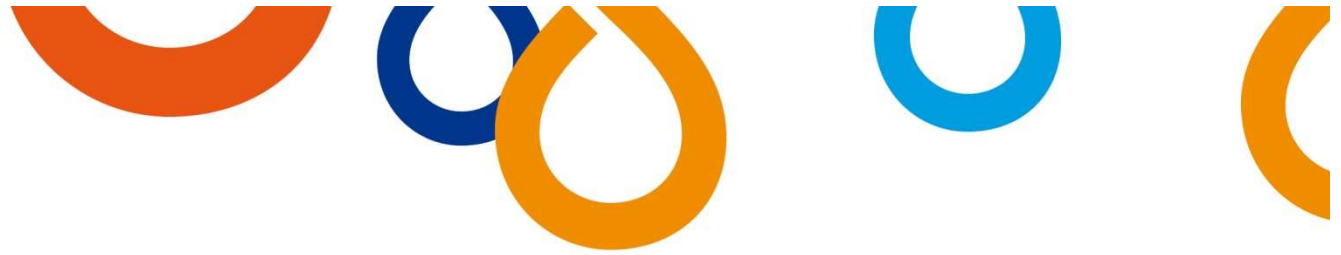
### Online Matchmaking Tools

- Databases of technologies and facilities (bioimaging, animal models, NMR, mass spec., etc.)
- Expert Search

### Strategic National and International projects

- IMI, NoAge, Healthy Ageing RoK, Food-Drug Synergies, Medicines Research Academy, Bioethics Forum, **FASILIS**

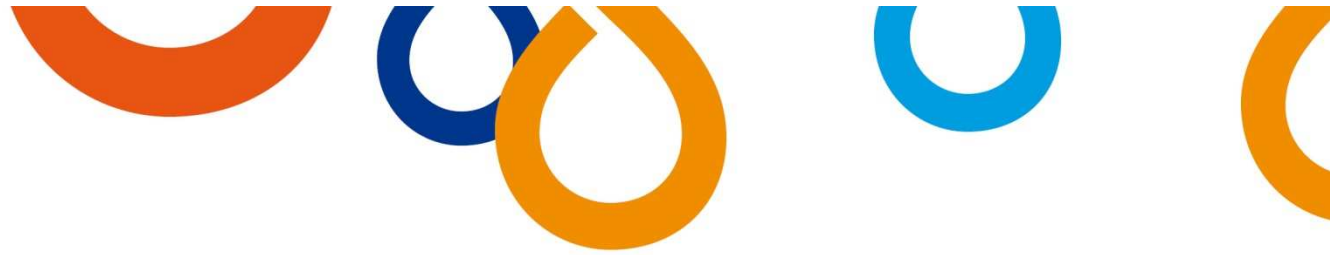




## What does Denmark have to offer SMEs in the FASILIS project?

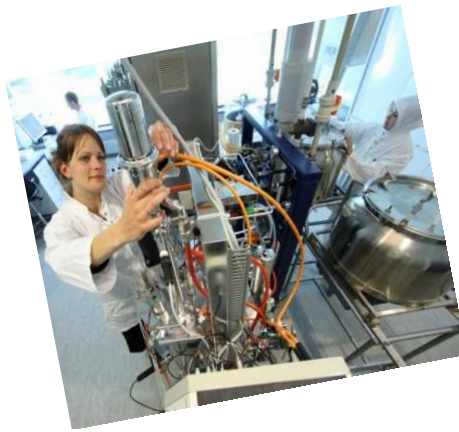
- Well, what do you want?
- I'll give a quick overview of three facilities; several others are already on board (see FASILIS online catalogue) or ***approachable and negotiable*** if you have a concrete request or interest!
- Bioneer
- DTU Danchip
- DELTA
- SBiN Lab: Structural Biology and NMR Laboratory
- 3D Craniofacial Image Research Laboratory
- Wilhelm Johannsen Centre Functional Genome Research
- Core Facility for Transgenic Mice
- And more – just ask!





## Bioneer

**Bioneer is the Danish Approved Technology Service institute for biomedicine, biomedical technology and biotechnology**



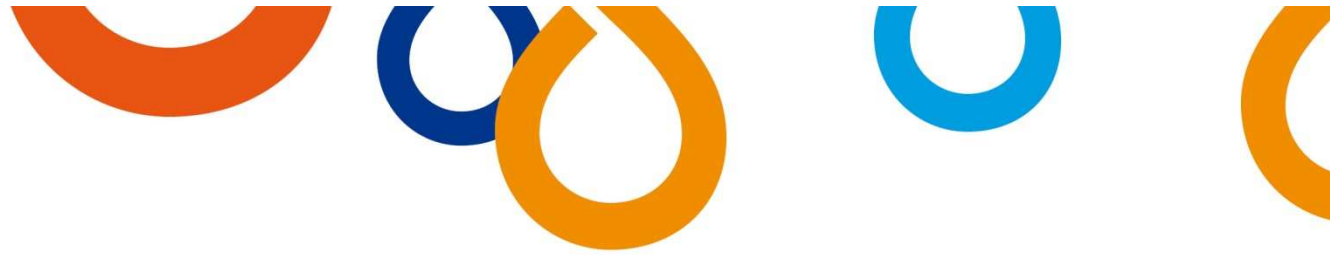
Develops new product & process opportunities by cross-linking ideas from science with ideas from the market.

### **Service areas include:**

- **Drug development**, from characterisation to formulation
- **Biomarker** discovery, validation and assay development
- **Protein manufacturing**, from organism selection & development to fermentation scale-up
- **Immune targeting**: variety of models
- **Active ingredients** and **microorganisms**



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## DTU Danchip

**DTU Danchip is the Danish national center for micro- and nanofabrication**

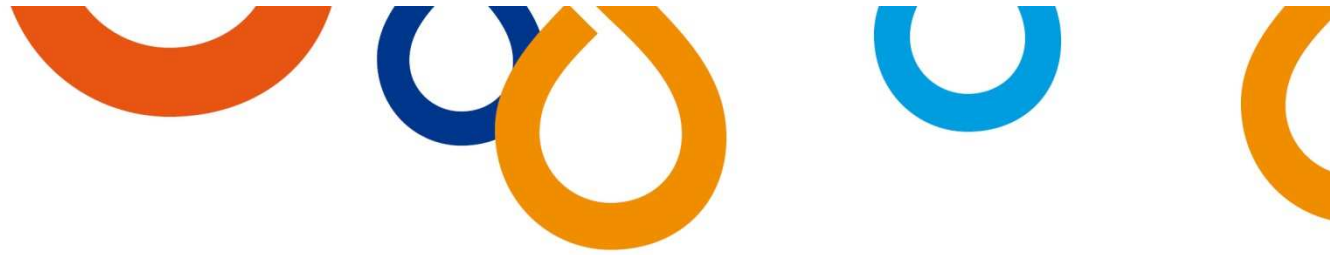


Operates and maintains open access state-of-the-art processing equipment and cleanroom facilities to enable:

- **Lithography**
- **Etching**
- **Thermal processing**
- **Thin film deposition**
- **Wafer cleaning, packaging, and characterisation**



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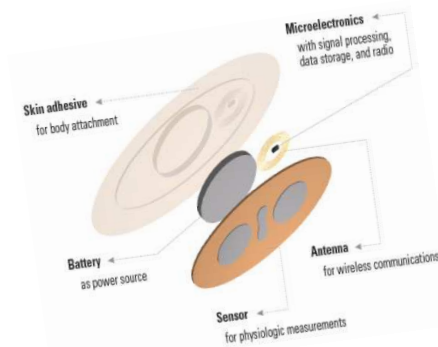


## DELTA

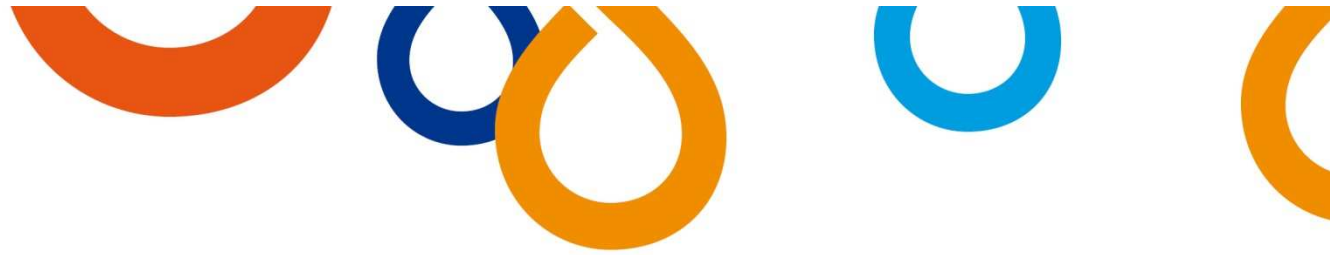
**DELTA is the Danish Approved Technology Service institute for electronics, microelectronics, software technology, light, optics, vibration & sensor systems**

Operates and maintains several relevant units for telecare as well as bio/med products and devices:

- **Test & Consultancy** with over 70 laboratories & facilities for testing reliability, EMC, acoustics, wireless, etc.
- **Microelectronics** has platforms for medical device ASIC applications, from design to final product (including the **ePatch** platform for body sensor systems)
- **Light & Optics** designs & produces state-of-the-art optical filters/thin films for life science & OEM sensor platforms
- **Point-of-Care** is involved in full system architecture for point-of-care technologies in microbiology, infections, pathogens, etc.

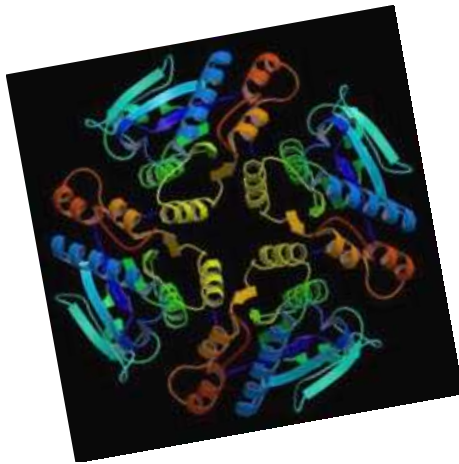


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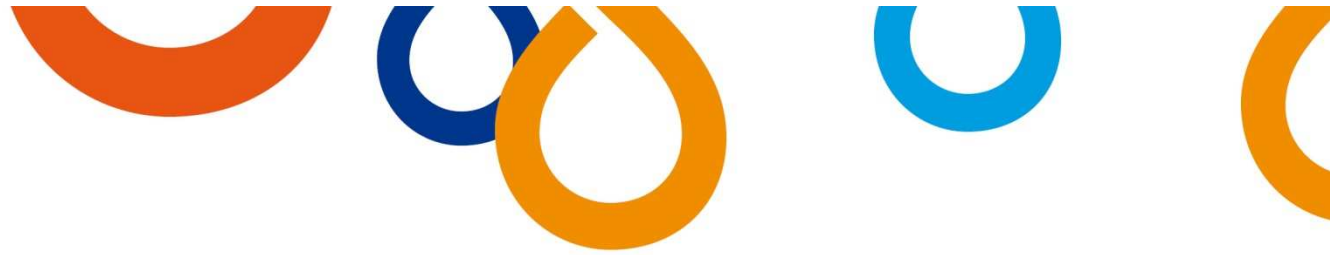
# SBiN Lab: Structural Biology and NMR Laboratory

**SBiN Lab aims to understand the correlations between the molecular structure of proteins & their functions**



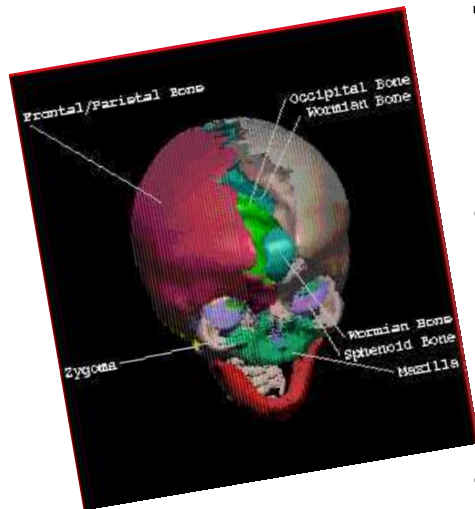
- SBiN Lab has access to scientific computing resources at the Danish Center for Scientific Computing. A key part of the research is the development and use of **computational methods** for **exploring different regions of the conformational space of proteins**.
- A wide selection of techniques are implemented at the laboratory including **NMR spectroscopy, optical spectroscopy, protein engineering, bioinformatics and molecular biology**.

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# 3D Craniofacial Image Research Laboratory

**The 3D Lab carries out research at the interface between engineering & medicine / dentistry**

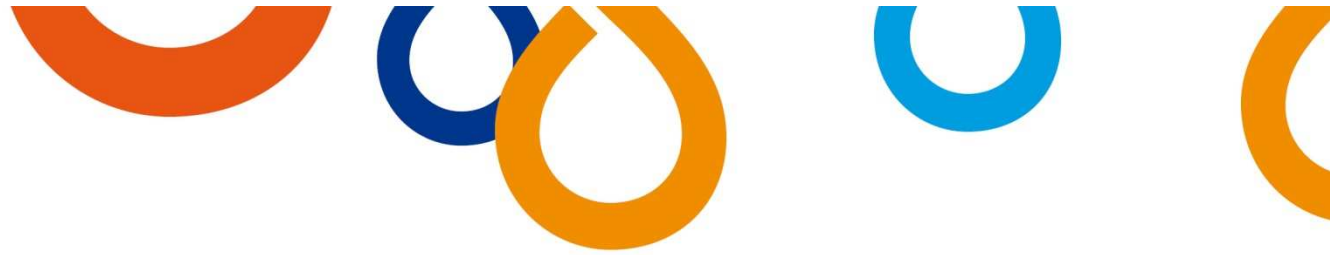


- While strongly focusing on craniofacial research, the laboratory has an interest in **cross-fertilization with other application areas of medical imaging and image analysis.**

- The laboratory has experience with many **3D image modalities** including **CT, Cone-Beam CT, micro-CT, MRI, 3D ultrasound, range scans, histologic / cryosection images**, and operates a facility for **stereophotogrammetric** face and head scanning which is used for both clinical and research purposes.

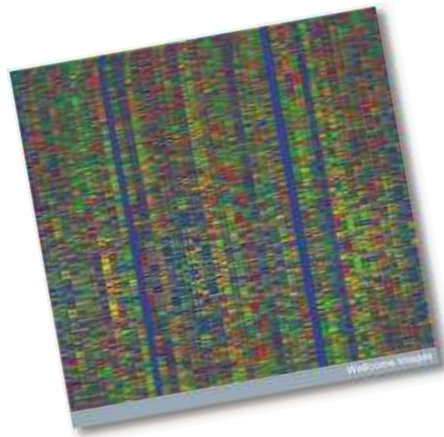
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## Wilhelm Johannsen Centre for Functional Genome Research

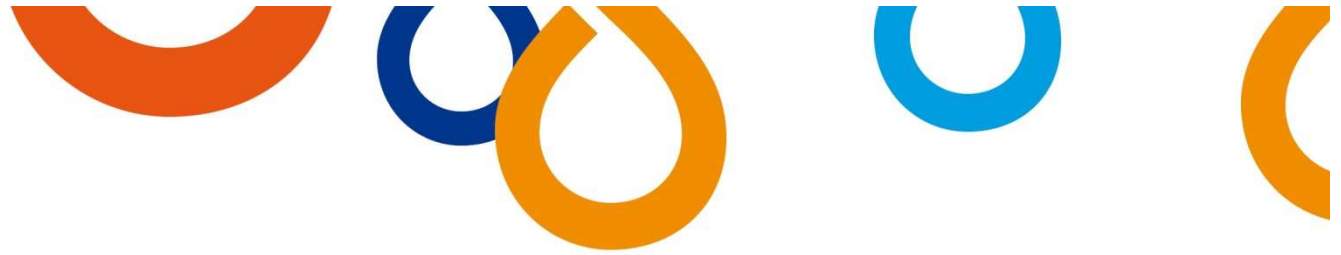
The WJC contributes to the **functional characterization of the human genome** by identifying **novel human disease genes**, **novel genetic entities**, and **novel genetic mechanisms**.



- WJC has a 2nd generation **Illumina Genome Analyzer GAI** with the current capacity to sequence close to 100 million clones, corresponding to more than 3 billion bps in one run. Capacity is soon due to triple.
- WJC has developed **enhanced FISH technologies** to enable determination of spatial and temporal **microRNA** (miRNA) accumulation at the tissue, cell and subcellular levels. This technique is essential for understanding the **biological roles** of miRNAs and **miRNA-associated gene regulatory networks**.



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## Transgenic Mouse Facility

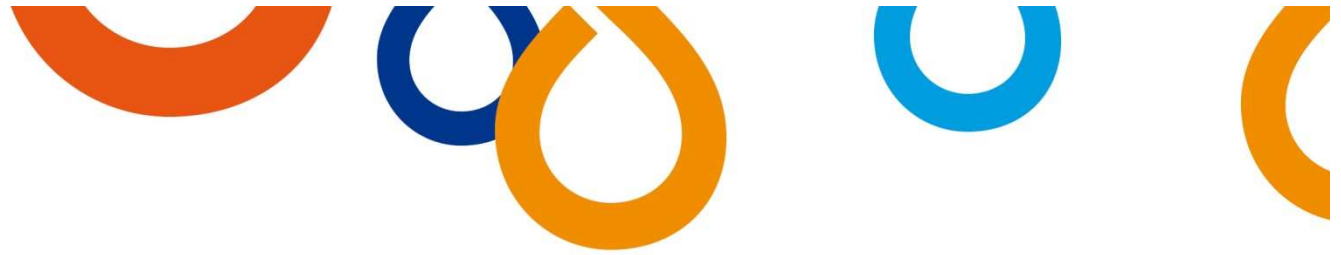


**Analyses of defined mutations in specific genes are crucial to understanding the in vivo function of molecules expressed during development, maintenance, and repair, as well as in various diseases.**

- Clinical studies currently performed with human patients may eventually be replaced by mouse models. Even complex diseases affected by many genes can be dissected by defined molecular alterations in vivo.
- The facility helps researchers to generate **mice with targeted gene alterations**, to **re-derive mice**, to **freeze and thaw embryos**, and to work on the development of new techniques.



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## For more information

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