

R&D Network meeting - DiaUnion 2020-06-18



Steno Diabetes Center
Copenhagen

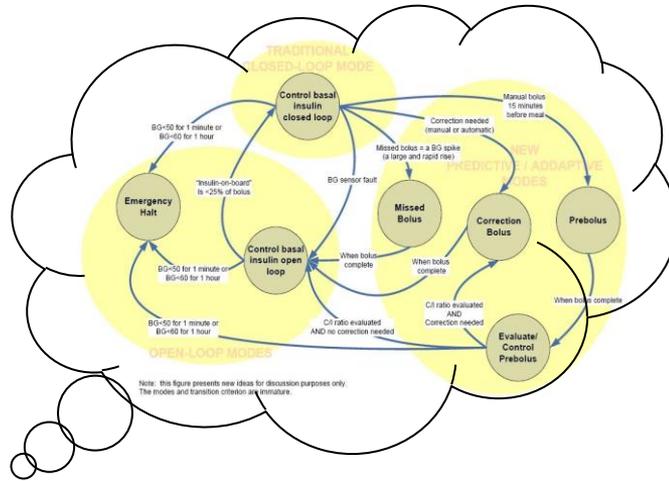


The Capital Region
of Denmark



Interreg 
Öresund-Kattegat-Skagerrak

About type 1 diabetes



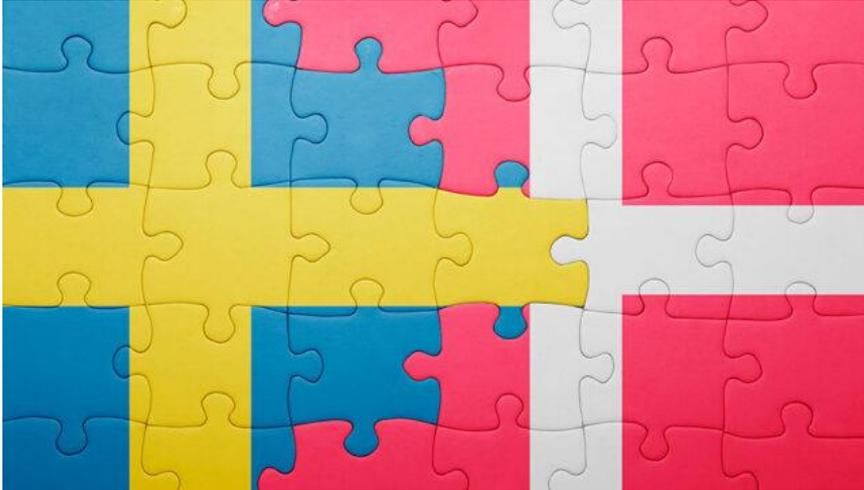
- Type 1 diabetes (T1D) is an autoimmune disease that most often affects children and adolescents, randomly and completely independent of personal lifestyle.
- It cannot be cured, and to stay alive, patients must inject insulin several times a day, in precise doses tailored to dietary intake, activity, illness, hormones, etc.
- Unfortunately, it is complicated and impossible to balance all variables perfectly, and no other disease requires as much of the patient on a day-to-day basis.
- Therefore, only about 20% of Danes with T1D reach the treatment target of 53 mmol/mol, resulting in debilitating complications and over mortality.



Region	Median	Fraktiler			
		10%	25%	75%	90%
Hele landet	62	49	55	72	83
Hovedstaden	62	48	54	71	82
Sjælland	63	49	55	72	82
Syddanmark	62	49	55	71	81
Midtjylland	62	49	55	71	83
Nordjylland	65	50	57	76	88

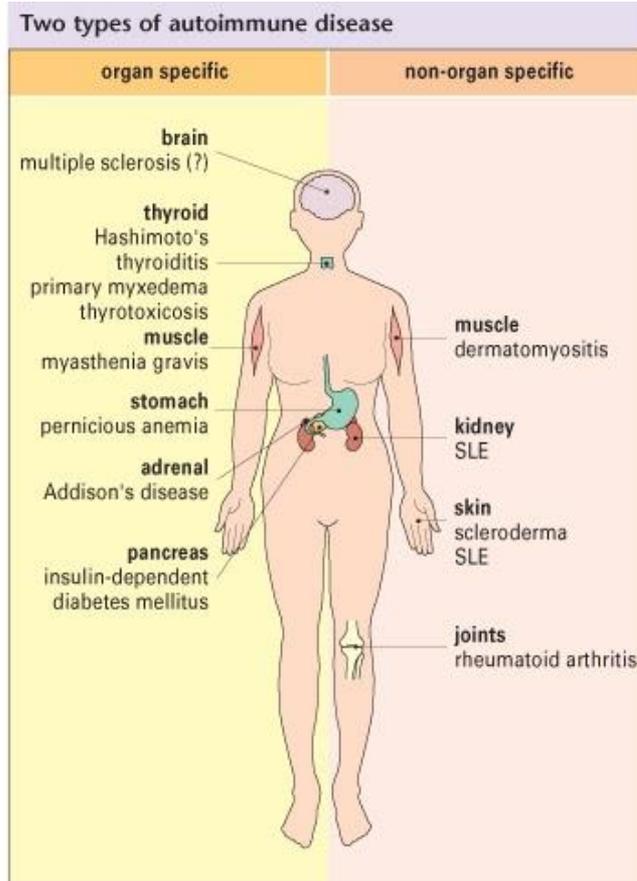
Source: Årsrapport for Dansk Diabetes Database 2016/2017

T1D in Sweden and Denmark



- Sweden and Denmark are among the countries in the world with the highest incidence and prevalence of T1D. In Sweden, 2 children are diagnosed every day and approx. 50,000 people have the disease. In Denmark, the numbers are similarly high: Approx. 30,000 Danes have T1D, including 4,000 children and adolescents.
- The societal cost of treating the disease in Denmark is just under DKK 3 billion annually, of which DKK 1 billion is for complications.
- The burden on the patients is huge: They suffer from daily hypo- and hypoglycemia (too low and too high blood sugar), as well as the risk of debilitating complications.

Research in T1D and other autoimmune diseases



- Research and development of drugs and therapies for T1D, and the related complications, will reduce the burden on patients as well as the cost to society.
- Based on the underlying mechanisms that T1D shares with other autoimmune diseases, DiaUnion will work to bridge with these. Celiac disease affects 10% and thyroiditis affects up to 30% of all children and adolescents with T1D.
- The link between T1D and other autoimmune diseases contains a huge, and only to a lesser extent exploited, potential for the development of new drugs and therapies.

Interregional cooperation with great potential



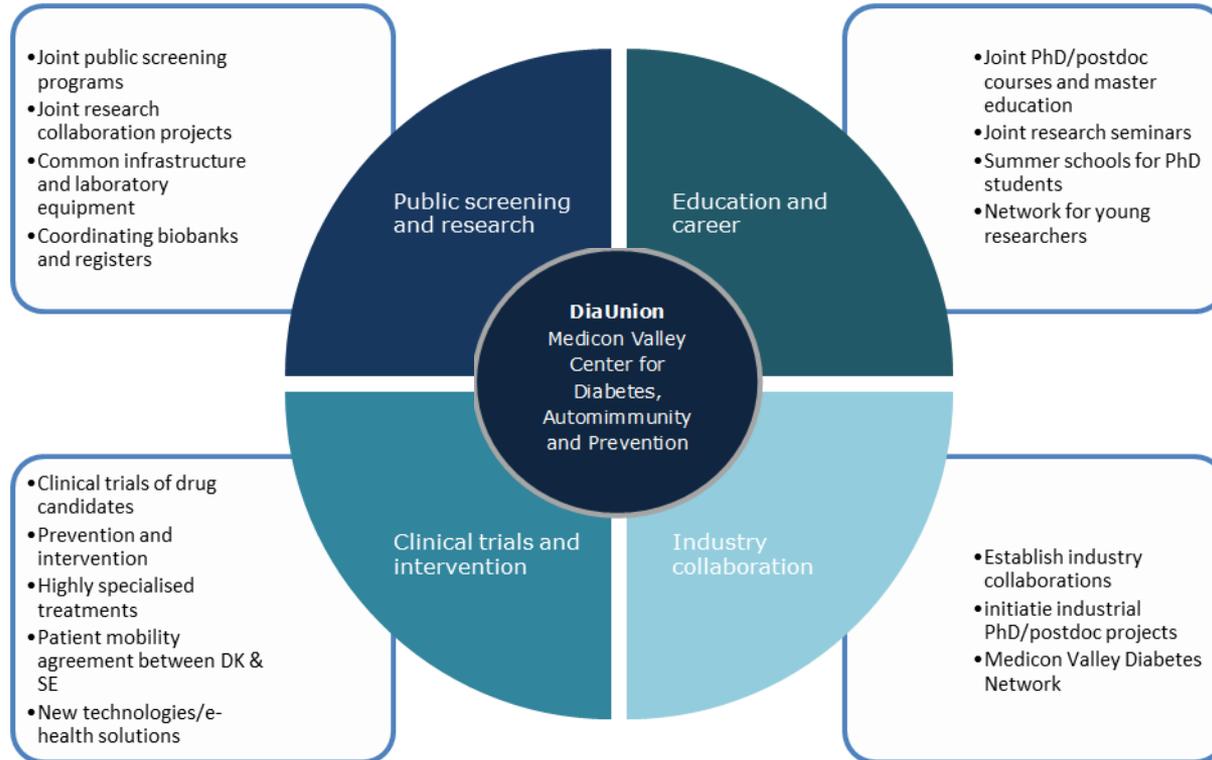
LUND
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Copenhagen**

- In the Øresund region, at Lund University and the Steno Diabetes Center, there are strong and internationally recognized competencies in screening, genetics and immunology in T1D as well as other autoimmune diseases.
- By gathering forces in a joint research effort, we will achieve synergies that both strengthen the prerequisites for the research and create a more efficient use of shared resources.
- It has the potential, in the long run, to make DiaUnion Europe's largest and leading center in the field. This will make the region more attractive for investment in research and development, as well as attracting companies to the region.

The long-term goal of DiaUnion is to create a center of excellence for autoimmune diabetes research, prevention and treatment based on the following model :





- Strengthen clinical studies in the prevention of autoimmune diabetes and complete two new research projects in collaboration between Steno Diabetes Center Copenhagen and Lund University.
- Establish education and career programs in collaboration with the regions' universities and the Danish Diabetes Academy to secure the next generation of researchers.
- Creating conditions for closer collaboration on treatment and prevention, and exchange of patients across the Danish-Swedish border.
- Develop collaboration with other research networks in the fields of screening, genetics and immunology.
- Identify industry partners and create public-private partnerships.

Identifying novel biomarkers for T1D Ongoing

The aim of the research project is to evaluate whether molecular lipid species can more accurately predict the risk of future development of T1D and the rate of development. The project will link to celiac disease and compare lipidomics in T1D with this disease.

Cohorts collected at Lund University CRC in Malmö will be used to identify high risk children at different stages in the pathogenic process. End-point blood samples will be obtained for lipidomics and cellular flow cytometric analyses at Steno Diabetes Center Copenhagen, and models to predict rate of progression to T1D, and identify the optimal age to perform lipidomic screening for T1D risk, will be developed.

Feasibility studie for interregional public screening program Planned

The aim is to establish a demonstration project in 2,000 children in Region Hovedstaden and 2,000 children in Region Skåne for the feasibility to screen for biomarkers for T1D, celiac disease and thyroiditis, three diseases sharing the association with HLA-DR and DQ risk-haplotypes.

The rationale is to identify the healthy children who later in life will develop anyone of the three diseases to provide:

1. Early diagnosis to prevent the severe and life-threatening disease onset complications.
2. Psychosocial support of preparing for disease management once the diagnosis is made without symptoms.
3. Participation in prevention trials.

