Competence Centre on Health Technologies

Company overview
Andres Salumets
CCHT in nutshell

- **Tervisetehnoloogiate Arenduskeskus AS**, established in 2009
- Competence Centre on Health Technologies, CCHT
- CC on Reproductive Medicine and Biology (CCRMB) until 2014
- **CCHT is a research and technology organization (RTO)** that invents and develops **products and technologies for molecular medicine**, including identifying disease biomarkers and elaborating diagnostic and therapeutic technologies
- Specific areas of expertise:
  - Reproductive medicine
  - Personalised medicine
  - Drug Development
12 equal shareholders of CCHT
Research & Technology Organization, 2009-2017

• Key facts:
  – Personnel of 40 researchers, mostly PhD
  – 180 articles published, including in *Nature* and *Nature Genetics*
  – >10 PhD and >25 MSc defended
  – 5 European patent applications
  – Well-equipped laboratory of 400 m²
  – Enterprise Estonia investment: 2015-2022, 6.9 M €
  – 30-40% of the budget comes from international RTD projects
  – Several FP7&H2020 grants for >3 M €, including principal investigator experience
  – Evaluated RTO by Estonian Ministry of Education and Research
International Collaboration
CCHT’s focus

Global challenges:

– Demographic changes → postponed family formation → increased incidence of infertility and need for prenatal genetic testing

– Infertility exists in 10-15% of reproductive-age couples

– In vitro fertilization (IVF) babies represent 5% of births

– Cancers account for 15% of deaths

CCHT will develop reliable, safe, and cost-effective technologies to tackle infertility, cancers & complex diseases
Proprietary technologies

• **GlobinLock®** - patented technology for removing globin RNA from clinical and research samples for sequencing
  – Swedish Business Award 2016. *Innovation of the year*
  In comparison with available other technologies:
  – more robust, requires less sample material
  – 10 times faster & 30 times cheaper

• **TAC-Seq technology** - patented technology for unbiased detection of RNA and DNA molecules for next generation sequencing
  – Applications: non invasive prenatal testing (NIPT), uterine lining (endometrium) quality testing, cancer diagnosis for possible relapse
Proprietary technology: Non-Invasive Prenatal Testing (NIPT)

- CCHT’s NIPTmer technology - rapid fetal genetic testing
- Clinical study of 600 samples & 40 fetal chromosomal (severe) diseases

90% maternal DNA
10% fetal DNA

9-10 week of pregnancy

Cell free DNA for analysis

Transport

Krjutškov, Horisont 2016
Non-Invasive Prenatal Testing - NIPT

Sequencing and analysing the DNA to reveal fetal diseases (e.g. Down syndrome)
FERTIFY®
personalised reproductive medicine test to predict the risk for age-related female infertility

Proprietary technology: FERTIFY

EARLY MENOPAUSE

1 in 20 early menopause before the age of 45

1 in 100 premature menopause before the age of 40

PREMATURE OVARIAN FAILURE

Fertify
Polygenic risk scores for early menopause and infertility

Normal age of menopause

Early onset of menopause

Negative genetic variants influencing the menopausal age
Polygenic risk scores for early menopause and infertility

Risk of early menopause

Probability of early menopause (%)

Low risk

High risk

Average risk 5.2%

10 X DIFFERENCE
How FERTIFY works?

- Predicting fertility potential
- Combination with ultrasound & hormones
- Family planning recommendations (including oocyte freezing & IVF)
Development pipeline

• Research on **probiotic strains** & product development
  – Collection of hundreds specific characterised lactobacilli;
  – Strains for bacterial vaginosis & candidiasis infections; safety trials completed and **clinical trials ongoing**
  – Input to new probiotic product development in 2018
• **Andres Salumets (CEO and CSO)** is responsible for daily management and coordinates all research and innovation projects

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• **Hardi Tamm (Development Manager)** is responsible for organizational development, quality management, and commercialization

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Thank you!

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