

Plant Genomics in Finland

- **No National Plant Genomics (or Genomics in general) research program in Finland.**
- **However, there are several independently run, funded and managed projects in the field of Plant Genomics**
 - No formal common coordination.
 - No integrated program that would cover these projects.
- **Each project is run by the PI**
 - frequent informal meetings
 - sharing same sequencing and informatics-resources
 - in many ways most of the groups are interacting,

Plant Genomics projects in Finland

1. **Birch** (*Betula pendula*) EST sequencing / cDNA array consortium (3 groups), public funding (prof Tapio Palva, prof Jaakko Kangasjärvi, Dr. Ykä Helariutta, University of Helsinki)
2. **Populus euphratica** EST sequencing/cDNA arrays, EU funding (prof Jaakko Kangasjärvi, University of Helsinki)
3. **Arabidopsis** cDNA array project, spotting of the 'Incyte collection', public funding, Nordic funding (prof Eva-Mari Aro, University of Turku)
4. **Barley** EST sequencing / cDNA array project, public, private and EU funding (prof Alan Schulman, Agrifood Research Finland / University of Helsinki)
5. **Spruce** (*Picea abies*) EST sequencing, public and institutional funding (prof Teemu Teeri, University of Helsinki)
6. **Gerbera hybrida** EST sequencing / cDNA array, institutional funding (prof Teemu Teeri, University of Helsinki)

EST sequencing and DNA microarrays at the Institute of Biotechnology, University of Helsinki

ABI3700

- 96 capillary sequencer
- 4 plate option
- 96 or 384 plates
 - cover with folio to prevent evaporation
- 96 sequences / 3h
 - max 8 plates / 24 h
 - current speed 8 plates / day
 - 384 format
 - 4 x 384 possible

Equipments

- Tetrad MjResearch (4x96) and 4x ABI 9700 (1x96)
- Tecan Microplate Reader
- QFill 2 Microplate filler
- 2 Labsystems multidrops
- QPix Colony Picker
- Qiagen Biorobot 9600
- Qiagen Biorobot 8000
- Qiagen Biorobot 3000
- 2 Tecan Genesis RSP100
- Scan array 5000

Plant Genomics projects in Finland

- **Birch** (*Betula pendula*) EST sequencing / cDNA array consortium (3 groups), public funding
- 1999-2002, 1 000 000 € /3 years continuation applied
- Aim, 100 000 EST sequences from several libraries
- cDNA arrays, about 15 000 features (2003->)
- Wood formation, stress biology
- [prof Tapio Palva](#), [prof Jaakko Kangasjärvi](#), [Dr. Ykä Helariutta](#), University of Helsinki
- **Populus euphratica** EST sequencing/cDNA arrays, EU funding 'Establish'
- 2000-03, about 440 000 € /3 years
- 15 000 ESTs sequenced from several 'stress' libraries for the whole 'Establish' consortium
- cDNA arrays, about 7500 features (2003 ->)
- [prof Jaakko Kangasjärvi](#), University of Helsinki

Plant Genomics projects in Finland

- **Arabidopsis** cDNA array project,
- spotting of the 'Incyte collection',
- 2000-05
- public funding, Nordic funding; 630 000 € / 5 years
- Collaboration, Finland-Denmark
- Photosynthesis
- Chloroplast proteomics included
- [prof Eva-Mari Aro, University of Turku](#)
- **Barley** EST sequencing / cDNA array project,
- various parts of the project(s) ending between 02 and 06
- Grain development, disease resistance etc.
- Currently about 45 000 ESTs
- public, private and EU funding; about 440 000 € /year
- Extensive international collaboration, 3 EU projects (**MMEDV**, **GEDIFLUX**, **TEGERM**), etc
- [prof Alan Schulman, Agrifood Research Finland / University of Helsinki](#)

Plant Genomics projects in Finland

- **Spruce** (*Picea abies*) EST sequencing, public and institutional funding
- Lignin biosynthesis, Nordic collaboration with Norway and Sweden
- 10 000 ESTs currently, aim 30 000
- first phase ending 02, about 80 000 € (1st phase), continuation applied , 150 000 €
- [prof Teemu Teeri, University of Helsinki](#)
- **Gerbera hybrida** EST sequencing / cDNA array,
- institutional funding, about 125 000 € total
- 15 000 EST sequences from developing flower, secondary metabolism
- cDNA arrays
- [prof Teemu Teeri, University of Helsinki](#)

National Funding Agencies in Finland

- **The Academy of Finland** is an expert organisation in research funding and science policy. The Academy's object is to promote high-level scientific research through
 - long-term quality-based research funding,
 - science and science policy expertise
 - efforts to strengthen the position of science and scientific research.

In 2002 Academy support for research at Finnish universities and research institutes will amount to EUR 184 million. This represents more than 13 per cent of total government research funding. Each year Academy-funded projects account for a total of some 3,000 researcher-years.
- **Tekes**, the National Technology Agency finances research and development (R&D) projects of companies and universities in Finland. The funds are awarded from state budget via the Ministry of Trade and Industry.
- The impact of Tekes activities is felt in Finland as
 - **increasing exports,**
 - **a broader industrial base,**
 - **more jobs and**
 - **an improvement in the general welfare of society.**
- Funds technology development IN FINLAND

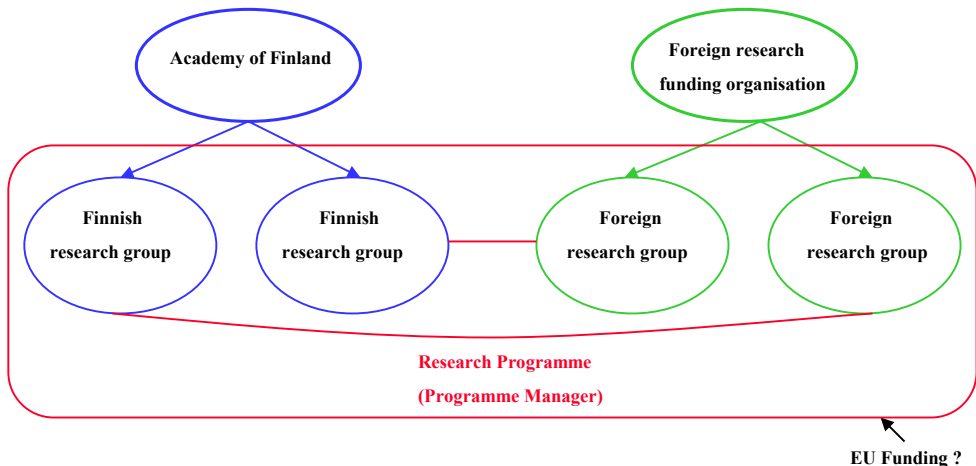
Ongoing National Programmes

- **Life 2000 - research programme on biological functions**
 - **Academy of Finland & Tekes**
 - **years 2000-2003**
 - **15 million €**
 - **89 research groups / consortia, 4 plant projects**
- **NeoBio - application of modern biotechnological methods**
 - **Tekes, (the National Technology Agency)**
 - **years 2001-2004**
 - **53 million €**
 - **39 research groups /companies, 4 plant projects**

Forthcoming National Programmes

- **Environmental, Societal and Health Effects of Genetically Modified Organisms**
 - Academy of Finland
 - years 2003-2007
 - 3,5 million €
- **Systems Biology and Bioinformatics**
 - Academy of Finland
 - Genome research and 'post-genomics'
 - years 2003-2007
 - 9 million €

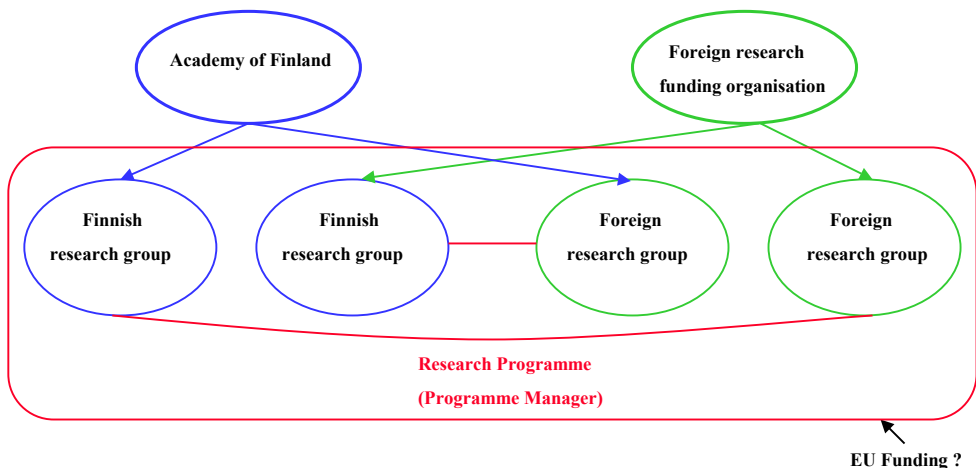
International co-operation between the research funding organizations



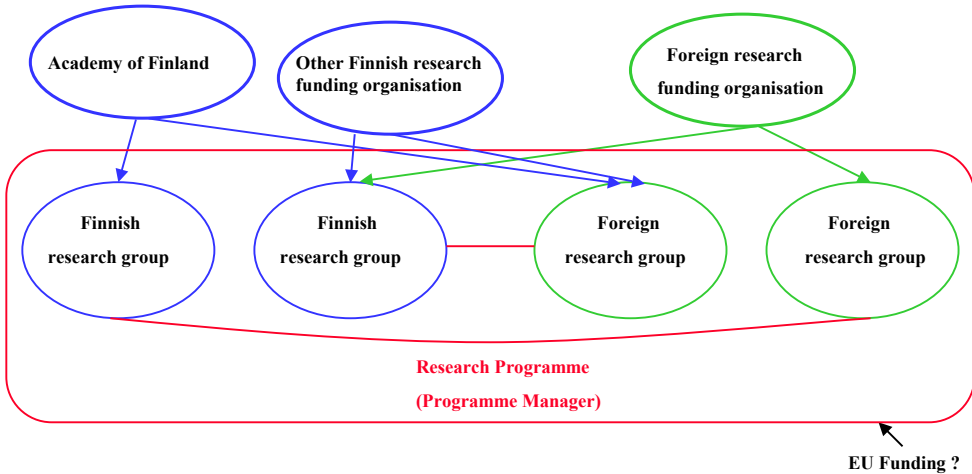
Funding models that have been discussed in the Academy of Finland

- The following three models / structures of funding in research programs have been discussed in the Research Council
- No practical examples yet
- No legal or administrative barriers for groups from other countries to apply for funding from the Academy of Finland
 - However, “National interest” considered
 - TEKES funds only Finnish research

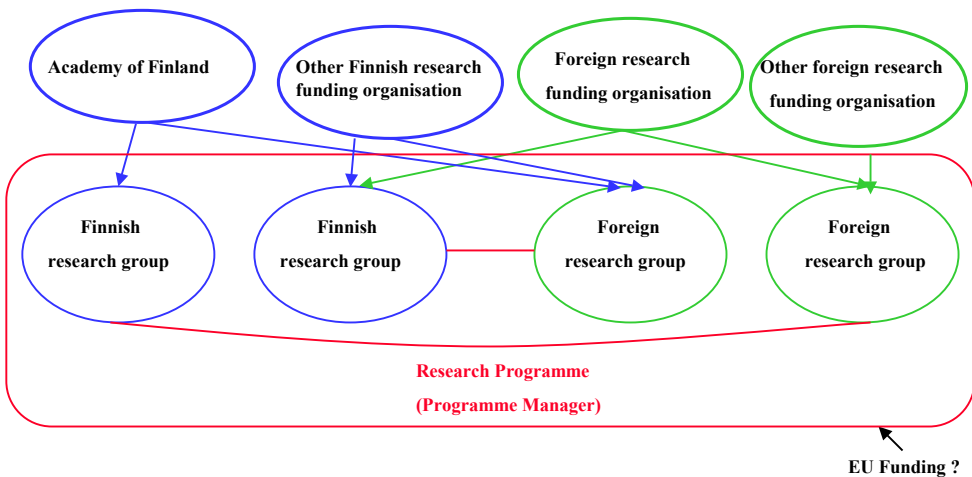
International co-operation between the research funding organisations



International co-operation between the research funding organisations



International co-operation between the research funding organisations



What is the added value of accessibility, and establishing a European research coordination?

“The usual things”

- **Increased critical mass**
- **More contacts between the groups**
- **Avoidance of ‘duplication of resources’**
- **Should allow creation of larger ‘Centers / core services’ which could serve several countries**
- **Better ‘integration’ in European plant research**