Evoltree

Evolution of trees as drivers of terrestrial biodiversity

A Network of Excellence in FP6

15 Countries, 25 Partners
228 Scientists
EU support: April 2006- September 2010 (> 14 Mil. €)

http://www.evoltree.eu/

REINER FINKELDEY, Göttingen University, Germany

ANTOINE KREMER, INRA, France
Shift of *Quercus petraea* bioclimatic envelope as a results of climate change

Current Distribution
simulated using BIOMOD

- Observation
- Simulation

Future Distribution: 2080
simulated using BIOMOD

- Loss of habitat
- Stable habitat
- Gain of habitat

Thuiller GCB 2003, Thuiller et al. PNAS 2005
What will happen to trees in these areas??

Get adapted ?? Decrease in fitness ?? Die ??

Rate of migration ? Adaptation ?

Thuiller GCB 2003, Thuiller et al. PNAS 2005
Why an interdisciplinary network of excellence?

The issues addressed are regional and not simply national.

They need to be tackled through interdisciplinary research.

Research is highly demanding in resources.

Only long-term research can provide answers to the specific questions addressed.
Network of Excellence

NoEs were created for the first time within the 6th framework programme (2002-2006)

NoEs are instruments to overcome the fragmentation of the European research and to strengthen European excellence in a given area

The purpose is to reach a durable restructuring/shaping and integration of efforts and institutions

NoEs include not only research activities, but also integration and dissemination activities
TREES & ASSOCIATED SPECIES

TREES
INSECTS
MYCORRHIZAL FUNGI

MODEL SPECIES
TARGET SPECIES
OBJECTIVES

• **Integrate** existing resources and construct a European research platform

• **Implement Paneuropean Research** in the field of ecosystem genomics

• **Disseminate** a high level excellence to the scientific community, end-users and to the public

• **Survive** after EU financial support and be self sustainable
Work packages

Integration activities
IA1 – Laboratory without Walls for Ecosystem Genomics (Gail Taylor)
IA2 - Common infrastructures (Silvia Fluch)
IA3 - Harmonization, consolidation, and perpetuation (Antoine Kremer)
IA4 - Human resource exchange (Hans Peter Koelewijn)

Jointly Executed Research Activities
JERA1 – Ecological genomics (Michele Morgante)
JERA2 – Genomic diversity in natural populations (Outi Savolainen)
JERA3 – Community structure and dynamics (Birgit Ziegenhagen)
JERA4 – Dynamics of biodiversity and evolution of populations (Reiner Finkeldey)

Spreading Excellence Activities
SEA1 – Training and Education (Ladislav Paule)
SEA2 – Dissemination (Jozef Turok)
SEA3 – Technology transfer (Bernd Degen)
SEA4 - International cooperation /cross-linking (Michele Morgante)

Management activities
MA1 – Network strategy (Antoine Kremer)
MA2 - Programme monitoring (Marie de Prémesnil)
MA3 - Consortium management (Marie de Prémesnil)
RESEARCH ACTIVITIES

EVOLUTION OF TREES AS DRIVERS
OF TERRESTRIAL BIODIVERSITY

INRA (France)
Alterra-WUR (The Netherlands)
ARCS (Austria)
BFH (Germany)
CNR-IGV (Italy)
VIB (Belgium)
GEUS (Denmark)
Göttingen Univ (Germany)
IT (France)
IPGRI (Italy)
NERC (UK)
PUM (Germany)
WSL (Switzerland)
TUZVO (Slovakia)
TUM (Germany)
INIA (Spain)
UNIUD (Italy)
CNRS (France)
UPSC (Sweden)
KWUB (Poland)
UOULU (Finland)
Soton (UK)
UWH (Hungary)
UU (Sweden)
MPI-COE (Germany)

ADAPTIVE DIVERSITY
COMMUNITY LEVEL
Intraspecific processes

Model Species

Adaptive Diversity

Intraspecific processes

Biotic interactions

Responses to climatic changes

Trees
Mycorrhizal fungi
Insects

Model Species

Target Species

Adaptive Diversity

Biotic interactions
CANDIDATE GENES
BUD BURST
BUD SET
WATER USE EFFICIENCY

METHODS
QTL MAPPING
GENE EXPRESSION PROFILING
ASSOCIATION STUDIES

SPECIES
Quercus
Pinus & Picea
Populus
Response of populations to global change: Translocation experiment with oaks and pines

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**EVOLUTION OF TREES AS DRIVERS OF TERRESTRIAL BIODIVERSITY**

**INTEGRATION ACTIVITIES**

**INFRASTRUCTURES**

**GENOMIC & ELECTRONIC RESOURCES**

**MONITORING AND EXPERIMENTAL SITES**
62 cDNA Libraries
300 000 Sanger EST sequences on 15 trees species, insects and mycorrhizal fungi
Several Millions of 454 Sequences
Full chloroplast sequences of european Fagaceae (oaks, beech)
BAC libraries
Phyloarray for molecular inventories of soil microorganisms
…..
• Purchase of **NEXUS** System (530k€)
• Delivery date 15.12.2007
• Capacity Universal Store:
  – Module -20°C: 5.100 plates
  – Module -80°C: 3.800 plates
• AIT Seibersdorf, Austria
CENTRALIZED AUTOMATED STORAGE UNIT OF GENOMIC RESOURCES

- gDNA and tissues
- cDNA clones
- BAC libraries
- Genomic enriched libraries
- 280,000 samples

SAMPLES ARE PROVIDED BY EVOLTREE PARTNERS AVAILABLE FOR THE COMMUNITY AT LARGE

ACCESS AND USE EXTENDED TO 2016
Electronic Laboratory (eLab)

EVOLTREE
EVOLUTION of TREES as drivers of terrestrial biodiversity

Welcome  Project  Research  e-Resources  Repository Centre  ISS  Dissemination  Mobility

EVOLTREE
is a large EU-funded Network of Excellence to analyze the impacts of climate change on forest ecosystems. A better understanding of the evolutionary history of forest trees can help us to predict how they might respond to climate change.

Dive into the project

Latest News
3rd Annual Meeting
The 3rd Annual Meeting of EVOLTREE will take place in February 2009.
Readmore...

Call for Proposals in JERU 2
Proposals are projects related specifically to JERU 2.1.
Readmore...

eLab
The eLab provides an integrated search over all databases currently available within the EVOLTREE project.

Start your search

Latest Events
Mon Dec 11th, 2000 - Fri Dec 17th, 2000
Summer School: Spatial and temporal variation of genetic structures in tree populations

Tue Feb 2nd, 2005 - Thu Feb 24th, 2005
EVOLTREE Third Annual Meeting

Latest Publications

Enter our library

Summer Schools
Summer School courses are organised by EVOLTREE partners within the dissemination activity JERU 1.

The title of the next course is “Spatial and temporal variation of genetic structures in tree populations” and it will take place in December 2000.

Learn more about our courses
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<th>DB</th>
<th>Contents</th>
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e Lab

eLab Search :: Start

Please select the type of data you want to search for as well as optionally a species:

Data Item
- Association
- Population
- Crossing
- Genetic Maker
- Library
- Map
- Material
- Microarray
- Microarray Experiment
- Organism
- Phenotypic Trait
- Population
- QTL

Species
- Acer pseudoplatanus
- Castanea sativa
- Cedrus atlantica
- Fagus mossesae
- Fagus orientalis
- Fagus sylvatica
- Fraxinus angustifolia
- Fraxinus excelsior
- Gleditsia triacanthos
- Lactaria decidua
- Lactarius quercus
- Laxus decidua
Intensive Study Sites (ISS)

MONITORING and EXPERIMENTAL PURPOSES
TOWARDS A GLOBAL ASSESSMENT OF BIOLOGICAL DIVERSITY
The future of EVOLTREE

- Continuation after September 2010
  - Under negotiation
    - Positive statement from governing board, June 8, 2010
  - Open platform
    - Contributions by partners
      - Financial
      - Substantial in kind (+financial)
  - Follow-up proposals planned
EVOLTREE Contacts

For more information on EVOLTREE please contact:
Project Coordinator, Dr. Antoine Kremer
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E-mail: kremer@pierroton.infra.fr

For information on EVOLTREE DISSEMINATION ACTIVITIES please contact:
Dr. Barbara Vinceti
Bioversity International, Rome, Italy
E-mail: b.vinceti@cgiar.org

…or contact me!!!
Prof. Dr. Reiner Finkeldey
Forest Genetics, Göttingen University, Germany
E-mail: rfinkel@gwdg.de
• 13 faculties, approx. 180 institutes

• More than 24,000 students

• 11.3 % students from abroad (among new entrants: approximately 20 %)

• 13,000 employees (including Medicine) including 420 professors

• Approx. 150 study programmes (B.Sc.; M.Sc.)

• Strong biodiversity research in several faculties and university centres

• http://www.uni-goettingen.de/en/1.html
Faculty of Forest Sciences and Forest Ecology

- Two institutes, 17 sections
- Research orientation
  - Biodiversity and global change
- More than 700 students
Forest Genetics and Forest Tree Breeding,
Göttingen University

http://www.uni-goettingen.de/en/67064.html