

## Curriculum Vitae

### Ioan Negrutiu

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**Place and date of birth:** Cluj (Romania), January 1st, 1948 ; **Nationality:** Belgian

### University degrees:

- agriculture engineer (1971), Agricultural University of Cluj, Romania
- biological sciences (1975), Free University of Brussels.
- PhD in Sciences (1977), Free University of Brussels.

**Since 1994**, Professor, Department of Life Sciences, ENS de Lyon, Plant Reproduction and Development laboratory.

**Post-docs** at the Free University of Brussels, Université Paris 6-Orsay, INRA de Versailles, Friedrich Miescher Institute, Basel.

**1986-1994**, senior scientists / group leader with the NFWO-FNRS (National Research Council) at the Free University of Brussels (VUB).

**2003:** sabbatical leave at Caltech (Meyerowitz laboratory)

**Publications:** 145 publications and editor of 5 books

**Invited Seminars:** 140

**Participation at conferences:** 128

### Expertise for National and International Institutions

AFRC and BBSRC (UK), CNRS and INRA (France), CYMMIT (Mexico), UE and INTAS (Brussels), EMBO, Fond National Suisse de la Recherche (Switzerland), IAEA/FAO (Vienna), HFSP, USDA/CRGO and NSF (USA).

### Distinctions:

**Since 1994**, member honorary “Academia Romana de Stiinte Agricole si Silvice”

**Since 2009**, Member of the Institut universitaire de France (IUF) ; Honorary member since 2014.

**As group leader** (research project on “Flower development and evolution”),

the research field covers plant developmental genetics and evolution, through collaborations in Belgium, Italy, Switzerland, France, UK, and USA.

The research investigates speciation mechanisms, sex determination and flower dimorphism, morphological innovations / optimizations, resources reallocation, phase change regulation and meristem termination, growth rate and biomass control.

Furthering the understanding of these evo-devo processes allowed me to focus the research on placenta development and evolution (with Michiel Vandenbussche, CNRS fellow and ATIPE project 2010-2014) and to revisit the biological productivity concept, a unique property of biological

resources.

**As teacher,**

I am teaching or have taught molecular genetics and epigenetics, integrative plant biology, plant development and evolution, biodiversity and biological resources, history of sciences, and contemporary issues in science and society. I am supporting projects that show biological sciences as key to the transition towards a new eco-society and civilization.

I have dealt with bio-resources and agriculture essentially through two of my courses in the Bioscience Masters' degree:

(1) "Science and society", that takes the students through notions of ethics / responsibility and issues such as man-nature relationship;

(2) An advanced course on "Bio-resources and biodiversity" during which invited experts discuss various topics within the resources problematic and public goods. The students and the pedagogic team perform personal work on various aspects of the course.

At international level and in addition to bilateral exchanges with EU universities through the ENS international agenda, I am a contributor to the Anthropocene Campus in Berlin since 2013.

**The interdisciplinary approach.** Since 2009, as a member of the Institut universitaire de France (IUF), I centred my activity on an interdisciplinary approach to natural resources, because they constitute THE key issue of our society. Plants, as primary producers, set the baseline of biomass production on land ecosystems.

I joined the EVS geography laboratory and developed preliminary studies on agro-resources in the Rhône-Alpes region (2009-2011; Cluster "Quality of plants, agricultures, actors and territories").

In 2011, I organized the IUF conference on "Resources" in Lyon, dedicated to an update of the disciplinary perception of the resources concept ([iuf20ans.org](http://iuf20ans.org); *Les ressources – Resources* (2011)).

To that end, I created the Michel Serres Institute for Resources and Public Goods at ENS Lyon in 2012, where I coordinate the work of students and colleagues from life sciences, economy, and legal studies towards an integrated approach to the natural resources problematic at conceptual, methodological, and operational levels. The Institute is hosted by IXXI, the Complex System Institute of Lyon, the starting point of the expert group for the project.

## Chosen Publications

- R. Dirks, **I. Negrutiu**, M. Heinderyckx & M. Jacobs, 1985. Genetic analysis of revertants for the nitrate reductase function of *Nicotiana plumbaginifolia*. *Mol. Gen. Genet.* **202**, 309-311.
- I. Negrutiu**, D. De Brouwer, R. Dirks And M. Jacobs, 1985. Amino acid auxotrophs from protoplast cultures of *Nicotiana plumbaginifolia* viviani: I. BUdR enrichment selection, plant regeneration, and general characterization. *Mol. Gen. Genet.* **199**, 330-337.
- I. Negrutiu**, R. Shillito, I. Potrykus, G. Biasini, F. Sala (1987). Hybrid genes in the analysis of transformation conditions. I. Setting up a simple method for direct gene transfer in plant protoplasts. *Plant Mol. Biol.* **8**, 363-373
- D. Colau, **I. Negrutiu**, M. Van Montagu, J.P. Hernalsteens (1987). Complementation of a threonine dehydratase deficient *Nicotiana plumbaginifolia* mutant after *Agrobacterium* mediated transfer of the *Saccharomyces cerevisiae* ILV1 gene. *Molecular and Cellular Biology* **7**, 2552-2557.
- Yu Gleba, A. Parokonny, V. Kotov, **I. Negrutiu**, V. Momot (1987). Spatial separation of parental genomes in hybrids of somatic plant cells. *Proc. Natl. Acad. Sci. USA* **84**, 3709-3713.
- M. Horth, **I. Negrutiu**, A. Burny, M. Van Montagu, L. Herrera-Estrella (1987). Cloning of a *N. plumbaginifolia* protoplast-specific enhancer-like sequence. *EMBO J.* **6**, 2525-2530.
- A. Mouras, **I. Negrutiu** (1989). Localization of the T-DNA on marker chromosomes in transformed tobacco cells by *in situ* hybridization. *Theor. Appl. Genet.* **78** : 715-720.
- G. Gharti-Chhetri, W. Cherdshewasart, J. Dewulf, M. Jacobs, **I. Negrutiu** (1992). PEG-mediated direct gene transfer - transient gene expression and integration pattern, genetic transmission and expression instability of foreign genes in two *Nicotiana* sp. *Physiologia Plantarum* **85**, 345-351
- B. Vyskot, A. Araya, J. Veuskens, **I. Negrutiu**, A. Mouras (1993). DNA methylation of sex chromosomes in a dioecious plant, *Melandrium album*. *Molec. Gen. Genetics* **239**, 219-224.
- W. Cherdshewasart, G.B. Gharti-Chhetri, M.W. Saul, M. Jacobs, **I. Negrutiu** (1993). Expression instability and genetic disorders in transgenic *N. plumbaginifolia* plants. *Transgenic Research* **2**, 307-320.
- J Veuskens, D. Marie, Sc Brown, M; Jacobs, **I Negrutiu**. Flow sorting of the Y sex chromosome in the dioecious plant *Melandrium album*. (1995) *Cytometry* **21**, 363-373
- Barbacar N, Hinnisdeals S, Farbos I, Monéger F, Lardon A, Delichère C, Mouras A & **Negrutiu I** (1997) Isolation of early genes expressed in reproductive organs of the dioecious white campion (*Silene latifolia*) by subtraction cloning using an asexual mutant. *Plant Journal* **12**, 805-817
- Lardon A, Georgiev S, Aghmir A, Le Merrer G, **Negrutiu I** (1999) Sexual dimorphism in white campion: complex control of carpel number is revealed by Y chromosome deletions. *Genetics* **151**, 1173-1185
- C. Delichère, J. Veuskens, M. Hernould, N. Barbacar, A. Mouras, **I. Negrutiu** SLY1, the first active gene cloned from a plant Y chromosome, encodes a WD-repeat protein (1999) *EMBO J.* **18**, 4169-4179
- C. Scutt, M. Oliveira, P. Gilmartin, **I. Negrutiu**. Morphological and molecular analysis of a double-

- flowered mutant of the dioecious plant white campion showing both meristic and homeotic effects (1999) **Developmental Genetics** 25, 267-279
- Filatov D., Moneger F., **Negrutiu I.**, Charlesworth D. (2000). Evolution of a plant Y-chromosome: variability in a Y-linked gene of *Silene latifolia*. **Nature**, 404 : 388-390
- Atanassov, C. Delichere, D. A. Filatov, D. Charlesworth, **I. Negrutiu** and F. Moneger (2001). Analysis of two functional Y-linked loci suggests at least two steps during sex chromosome evolution in a plant. **Mol. Biol. Evol.**, 18 : 2162-2168
- Negrutiu I.**, B. Vyskot, N. Barbacar, S. Georgiev and F. Moneger (2001). Dioecious plants, a key to the early events of sex chromosome evolution. **Plant Physiology**, 127:1-7.
- Breuil-Broyer S, Morel P, de Almeida-Engler J, Coustham V, **Negrutiu I**, Trehin C (2004) High-resolution boundary analysis during Arabidopsis thaliana flower development **Plant Journal** 38: 182-192
- Nicolas M, Marais G, Hykelova V, Janousek B, Laporte V, Vyskot B, Mouchiroud D, **Negrutiu I**, Charlesworth D and Monéger F. (2005) A gradual and ongoing process of recombination restriction in the evolutionary history of the sex chromosomes in dioecious plants. **Plos Biology**, 3/1, 47-56
- Zluvova J, Janousek B, Lengerova M, Markova M, Hobza R, Nicolas M, **Negrutiu I** and Vyskot V (2005) A study of the inter-specific hybrid *Silene latifolia* x *S. viscosa* reveals early events of Y chromosome evolution in the genus *Silene* **Development and Evolution** 7(4):327-36
- Aubourg S, Brunaud V, Bruyère C, Cock M, R Cooke, A Cottet, A Couloux, P Déhais, G Deléage, A Duclert, M Echeverria, A Eschbach, D Falconet, G Filippi, C Gaspin, C Geourjon, J-M Grienenberger, G Houlné, E Jamet, F Lechauve, O Leleu, P Leroy, R Mache, C Meyer, H Nedjari, **I Negrutiu**, .... M Caboche and A Lecharny (2005) GENEFARM, structural and functional annotation of Arabidopsis gene and protein families by a network of experts. **Nucleic Acids Research**, 33, Database issue D641–D646
- Zluvova J, Janousek B, **Negrutiu I**, Vyskot B. (2005) Comparison of the X- and Y-chromosome organisation in *Silene latifolia*. **Genetics** 170: 1431-1434
- Zluvova J, Nicolas M, Berger A, **Negrutiu I** and Monéger F (2006) Sex determination and premature arrest of male flower meristem in the dioecious plant *Silene latifolia*. **PNAS** 103, 18854-18859
- Zluvova J, Georgiev S, Janousek B, Charlesworth D, Vyskot B, **Negrutiu I.** (2007) Early events in the evolution of the *Silene latifolia* Y chromosome: male specialization and recombination arrest. **Genetics** 177:375-86
- Mrackova M, Nicolas M, Hobza R, **Negrutiu I**, Monéger F, Widmer A, Vyskot B and Janousek B (2008) Independent origin of sex chromosomes in two species of the genus *Silene*, **Genetics** 179:1129-33
- Prunet N, Morel P, Thierry AM, Eshed Y, Bowman J, **Negrutiu I** and Trehin C (2008) The REBELOTE, SQUINT and ULTRAPETALA1 genes function redundantly in the temporal regulation of floral meristem termination in Arabidopsis thaliana **Plant Cell** 20 : 901-919

Morel P, Tréhin C, Breuil-Broyer S, **Negrutiu I** (2009) Altering FVE/MSI4 results in a substantial increase of biomass in Arabidopsis - the functional analysis of an ontogenesis accelerator **Molecular Breeding** 23:239–257 DOI: 10.1007/s11032-008-9229-8

Prunet N, Morel P, **Negrutiu I**, Trehin C. (2009) Time to stop: flower meristem termination. **Plant Physiology** 150, 1764-1772 (DOI:10.1104/pp.109.141812).

Tavares R, Cagnon M, **Negrutiu I**, Mouchiroud D (2010) Testing the recent theories for the origin of the hermaphrodite flower by comparison of the transcriptomes of gymnosperms and angiosperms. **BMC Evolutionary Biology** 10:240-247 <http://www.biomedcentral.com/1471-2148/10/240>

Ronse De Craene L, Tréhin C, Morel P, **Negrutiu I** (2011) Carpeloidy in flower evolution and diversification – a comparative study in Carica papaya and Arabidopsis thaliana. **Annals of Botany** 107: 1453-64.

**Negrutiu I** (2011) Interdisciplinarity for the long-term: targetting resources. In: Les ressources. Les colloques de l'Institut universitaire de France. Negrutiu I, Del Fatti N, Bravard JP, Vieira C (Eds). PUSE St. Etienne, France, pp327-337.

Honet C, **Negrutiu I** (2012) De l'agriculture comme problème à l'agriculture comme solution: des plantes et des homes. In: *Le végétal saisi par le droit* (Coordination Dross W), Ed. Bruylant, Bruxelles pp 7-46

**Negrutiu I**, Salles JM (2013) Les ressources : le capital naturel évanescent et le défi démographique, In: *Le développement durable à découvert*. EdS A Euzen, L Eymard, F Gaill, CNRS Paris, pp68-69.

de Bossoreille de Ribou S, Douam F, Hamant O, Frohlich MW, **Negrutiu I**, 2013, Plant science and agricultural productivity: Why are we hitting the yield ceiling? **Plant Science**, 210: 159– 176.

Trehin C, Schrempp S, Chauvet A, Berne-Dedieu A, Thierry AM, Faure JE, **Negrutiu I**, Morel P (2013) QUIRKY interacts with STRUBBELIG and PAL OF QUIRKY to regulate cell growth anisotropy during Arabidopsis gynoecium development. **Development** 140(23):4807-17

Papers in the ERC program LASCAUX publication « *Penser une démocratie alimentaire /Thinking a food democracy* », Collart Dutilleul F. et Bréger T. (dir.), éd. Inida, San José, Costa Rica, 504 p. open access: <http://f.hypotheses.org/wp-content/blogs.dir/1874/files/2014/07/DemocratieAlimentaireVol2-24feb2014.pdf>

(1) Fernandez Fernandez E., Malwé C., **Negrutiu I**. (2014) Définitions des ressources naturelles et implications pour la démarche juridique, p. 71-78.

(2) Clappe et al. (2014) « Pour une démocratie socio-environnementale : cadre pour une plate-forme participative sur la « transition écologique », p. 87-112.

(3) **Negrutiu I**, Couvet D., Doussan I., Kalinowski W., Malwé C., Roudart L., Salles J.-M., Weber J.-L. (2014) « Les ressources – le grand enjeu de la transition sociétale et écologique », p. 125-142

(4) Weber J.-L., Fernandez Fernandez E., Malwé C., Salles J.-L., Collart Dutilleul F. et **Negrutiu I**. (2014) « A Natural Resource-Systems approach: Targeting the Ecological Transition at the Regional Scale », p. 143-168.

Prunet N, Morel P, Champelovier P, Thierry AM, **Negrutiu I**, Jack T, Trehin C, 2015, SQUINT promotes stem cell homeostasis and floral meristem termination in Arabidopsis through APETALA2 and CLAVATA signalling. **Journal of Experimental Botany**, doi:10.1093/jxb/erv394

Negrutiu I, Hamant O, Le Gall J, Merchez L, Weber JL (2015) From Valuing Nature to Reclaiming Resources, Accesible at <http://dev.anthropocene-curriculum.org/pages/root/campus-2014/valuing-nature/from-valuing-nature-to-reclaiming-resources-handbookand-practicals/from-valuing-nature/>

Breuil-Broyer S, Trehin C, Morel P, Boltz V, Sun B, Ito T, **Negrutiu I** (2016) Analysis of the Arabidopsis superman allelic series and the interactions with other genes demonstrate developmental robustness and joint specification of male-female boundary, flower meristem termination, and carpel compartmentalization. *Annals of Botany* 117, 905-923

## **Books**

A Laboratory Guide for Cellular and Molecular Plant Biology. Biomethods Series, Birkhäuser 1991 (325 pp.). **I. Negrutiu** & G. Gharti-Chhetri Eds.

Sex determination and differentiation in plants. Elsevier, 1991 (200 pp), **I. Negrutiu**, Editor

D'une agriculture l'autre. Atelier de la Démocratie : Opération Villages Roumains, Agriculture et Environnement. Conseil de l'Europe, Strasbourg, 1992 **I. Negrutiu** Ed (150 pp).

Negrutiu Emil, Memorii - de la o agricultura la alta (2011). **Negrutiu Ioan**, Monica Marasescu, Liana Pop (Eds). Echinox and Academic Press, Cluj-Napoca. 387p.

Les ressources (2011). Les colloques de l'Institut universitaire de France. **Negrutiu I**, Del Fatti N, Bravard JP, Vieira C (Eds). PUSE St. Etienne, France. 356p.

## **DVD**

« Un monde à nourrir », collection Recherches, Productions Chromatiques 2011, Anne Guicherd