

De opkomst van Biotechnologie in Gent: Van Moleculaire Genetica naar Systeem Biologie

Museum van de Wetenschappen - 31 januari 2013

Prof. Em. Marc Van Montagu
Chairman, IPBO, President EFB, President PRRI



Institute of Plant Biotechnology Outreach (IPBO)

Websites: <http://www.ipbo.ugent.be>
<http://www.psb.ugent.be>
<http://www.efb-central.org>
<http://www.prrri.net>

Email : marc.vanmontagu@ugent.be

Ghent University 1816

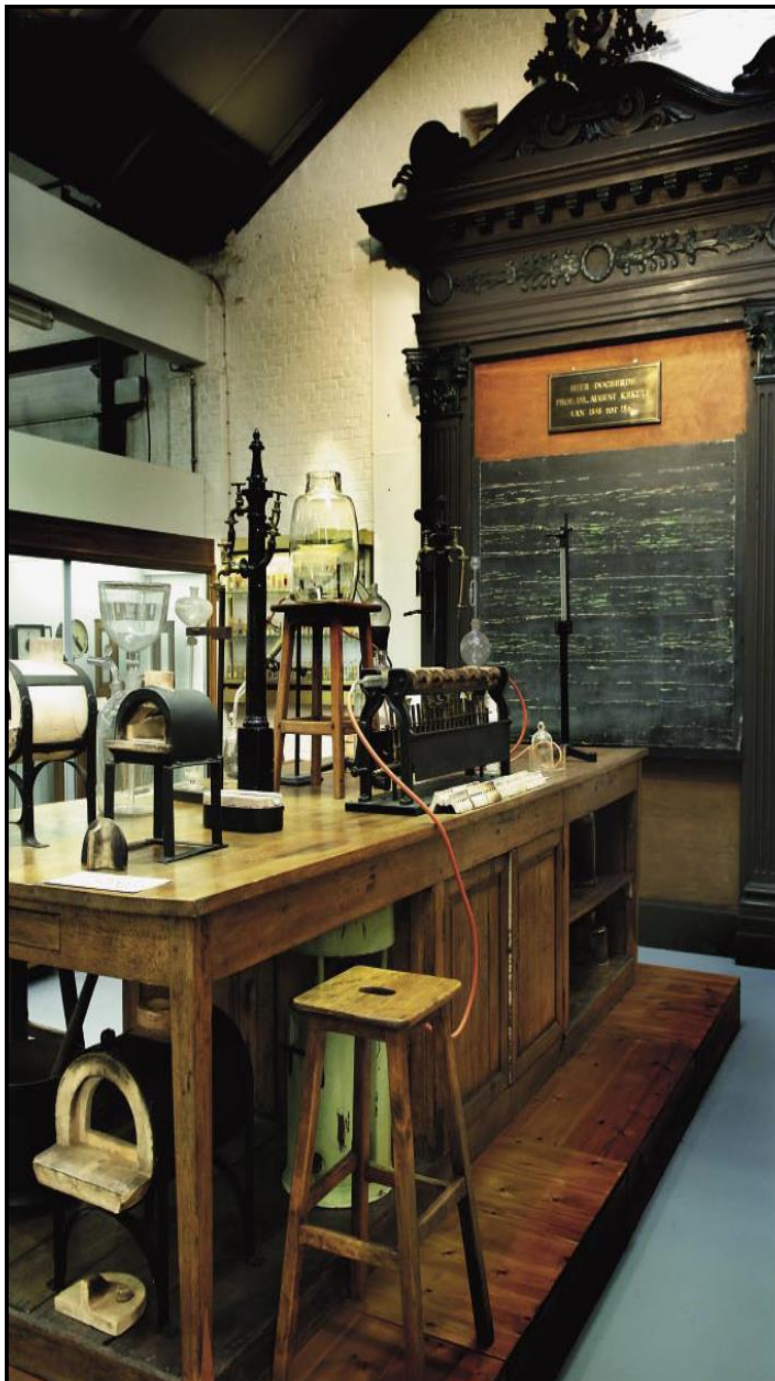
- 1817
Several Faculties including
Faculty of Science
*All teaching in **Latin***
- 1830
Starting Faculty of Civil
Engineering
*All teaching in **French***
- 1930
*Teaching in **Flemish***



August Kekulé with his assistants



f.l.t.r. sitting: Théodore Swarts, August Kekulé, Carl Glaser (later director of BASF)
f.l.t. r. standing: August Mayer, Wilhelm Körner (later Prof. in Milano), Esch, Semmel,
Behrend, Albert Ladenberg (later Prof. in Breslau)

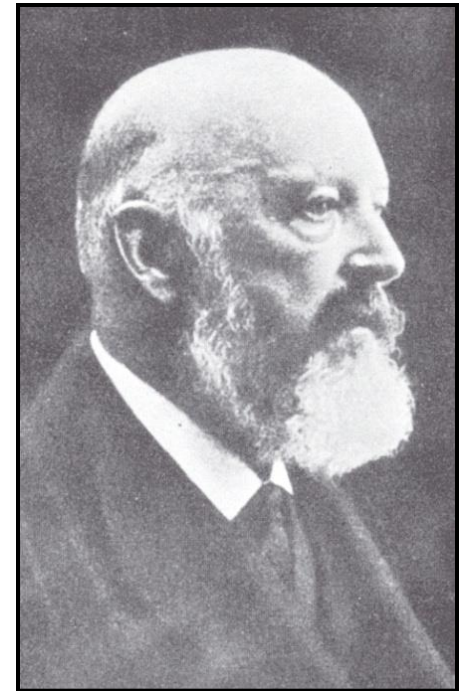


Science Museum of Ghent

F. Kekulé's blackboard and
laboratory at Ghent University
(1856 – 1867)

Adolf van Baeyer, assistant of August Kekulé

- 1864 first synthesis of barbituric acid
- 1872 studies the reaction of phenol with formaldehyde
- 1878 first chemical synthesis of a pigment (indigo-blue, the jeans color).



Adolf von Baeyer 1835-1917

Leo Baekeland's Dilemma



Industrial vs. Academic career

Van Moleculaire Genetica naar System Biologie - 31/1/2013



Julius MacLeod en Camille de Bruyne



MUSEUM VOOR
GESCHIEDENIS
DER WETENSCHAPPEN

— GENT 4778
106

•University Liège

Albert Szent-Györgyi, Rita Levi Montalcini

•University Brussels (ULB)

Albert Claude, Raymond Jeener, Jean Brochet, Hubert Chantrenne, René Thomas

•University Louvain (UCL)

Christian De Duve

•Ghent University

Lucien Massart, Lucien De Coninck, Laurent Vandendriessche





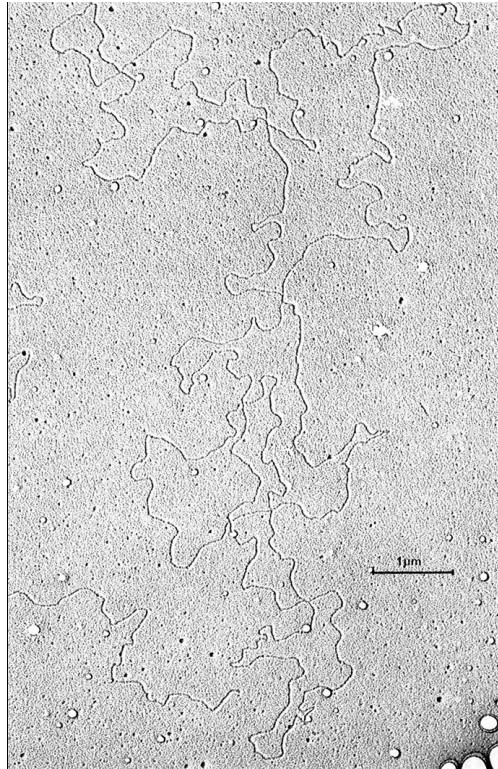
Het modern chemisch Laboratorium
Le Laboratoire chimique moderne
Univ. Gent 1955



Biotech crop history



1904, *Agrobacterium tumefaciens*



1974, Ti Plasmid, Gent



Arabidopsis thaliana
(Acker-Schmalwand)

1990's genomics



1996 Commercial launch

Intensive Agriculture Under Pressure



Oil palm plantation, Malaysia

- Rio+20 asks sustainable agriculture
- Society asks limits:
 - appropriate balance between profit, planet and people
 - sustainable soil use, nature conservation, recreation, water management, and landscape conservation

Challenges for agriculture

Tackle food security issues & environmental constraints on productivity.



Reduce the environmental footprint of industry & Agriculture



Plants for fuels and .
the chemical industry.



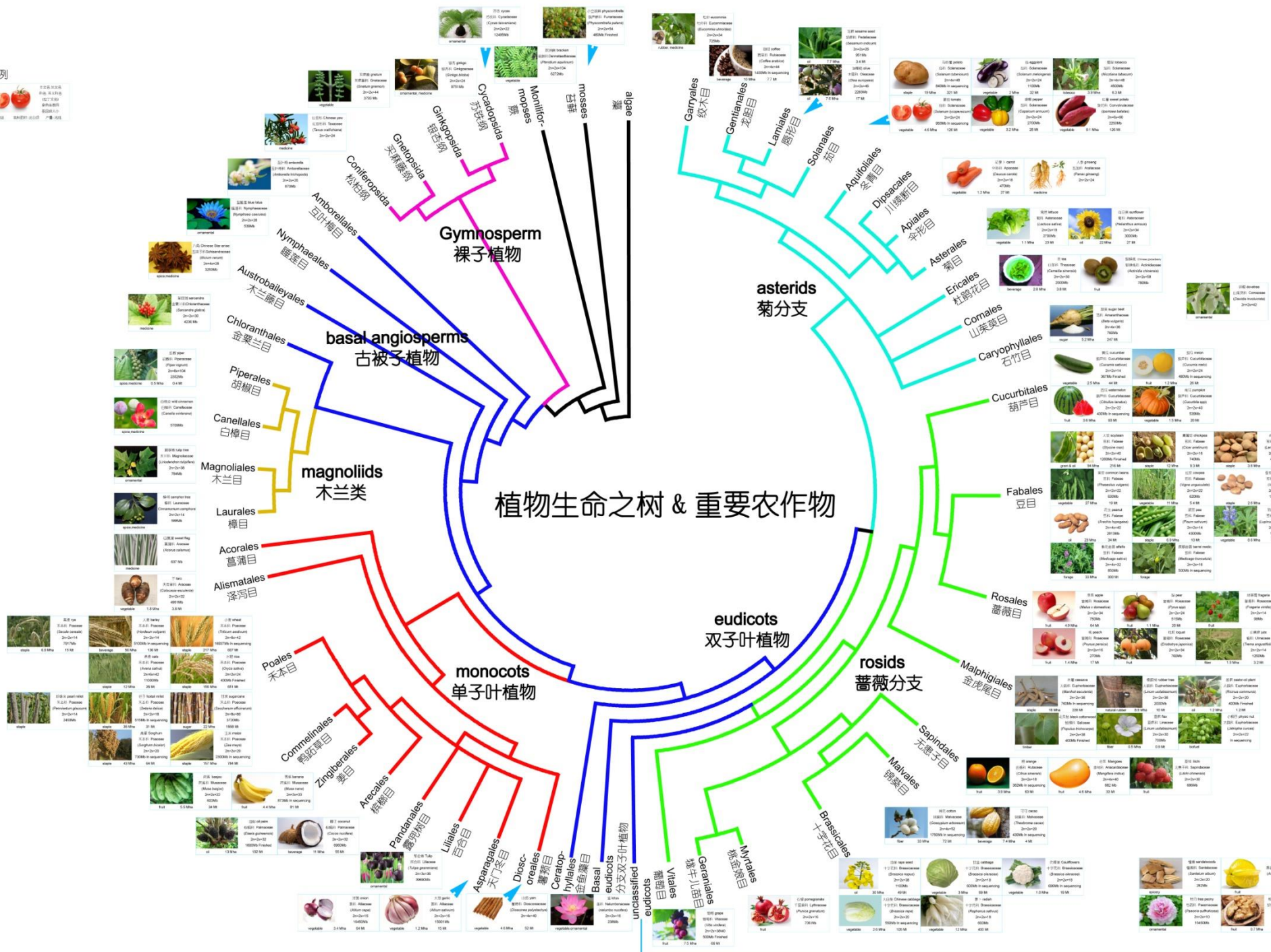
Biotechnology as a coherent answer to these challenges.

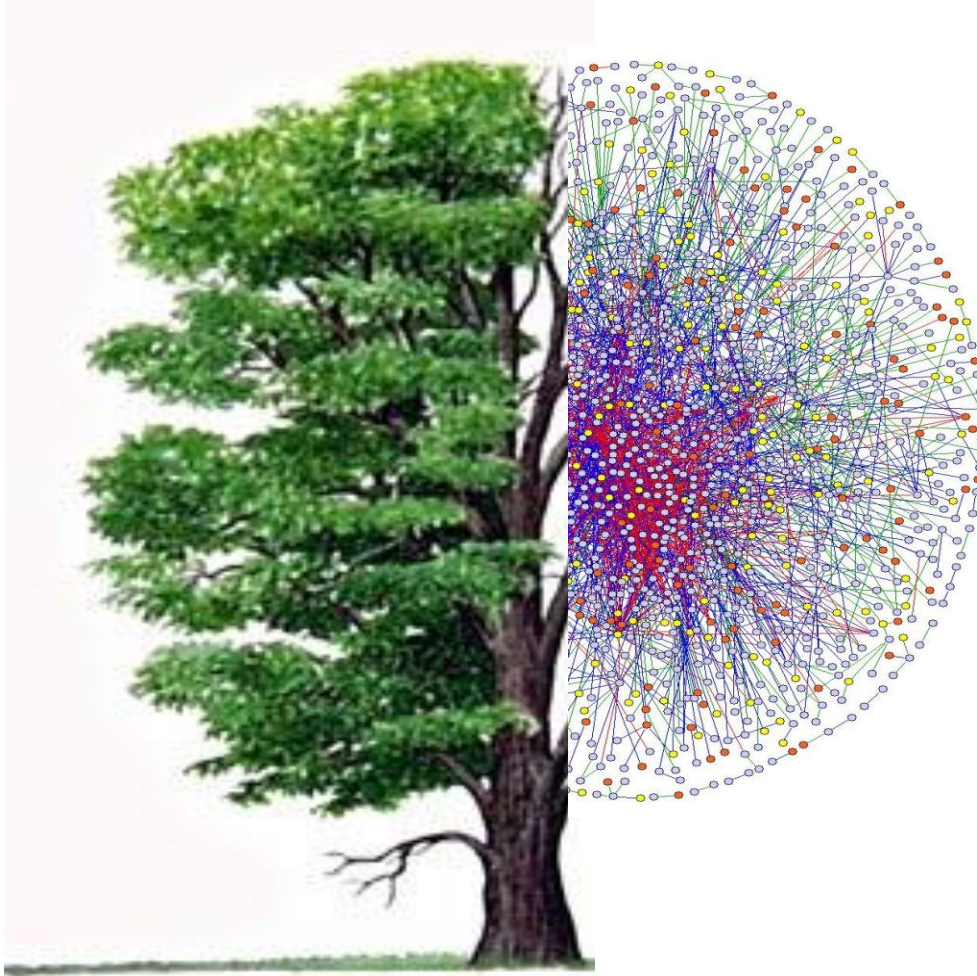


图例



植物生命之树 & 重要农作物





Plants for Knowledge

Are
GMOs

Dangerous for health?

Dangerous for the environment?

Unnatural?

Of no interest nor advantage to our society?

A monopoly of 6 multinationals?

After 25 years of field trials and 12 years of regular consumption

NO!

Not a single health incident that could be attributed to GMO has been reported. There is no research evidence that shows consumption of GMOs to be harmful to our health.

NO!


GM crops are not more harmful for the environment than any other crop. On the contrary, there are clear ecological benefits, at least when placed in the whole picture of the role of agricultural systems in maintaining biodiversity.

The danger of misinformation



Science Communication

Should society decide on the correctness of scientific findings?



Science
versus
Information
cocoon

- Galileo
- Vaccination
- UFO's and space visitors
- Horoscope
- Ghosts and communication with the dead

Today's plant biotechnology in Ghent



Bayer CropScience

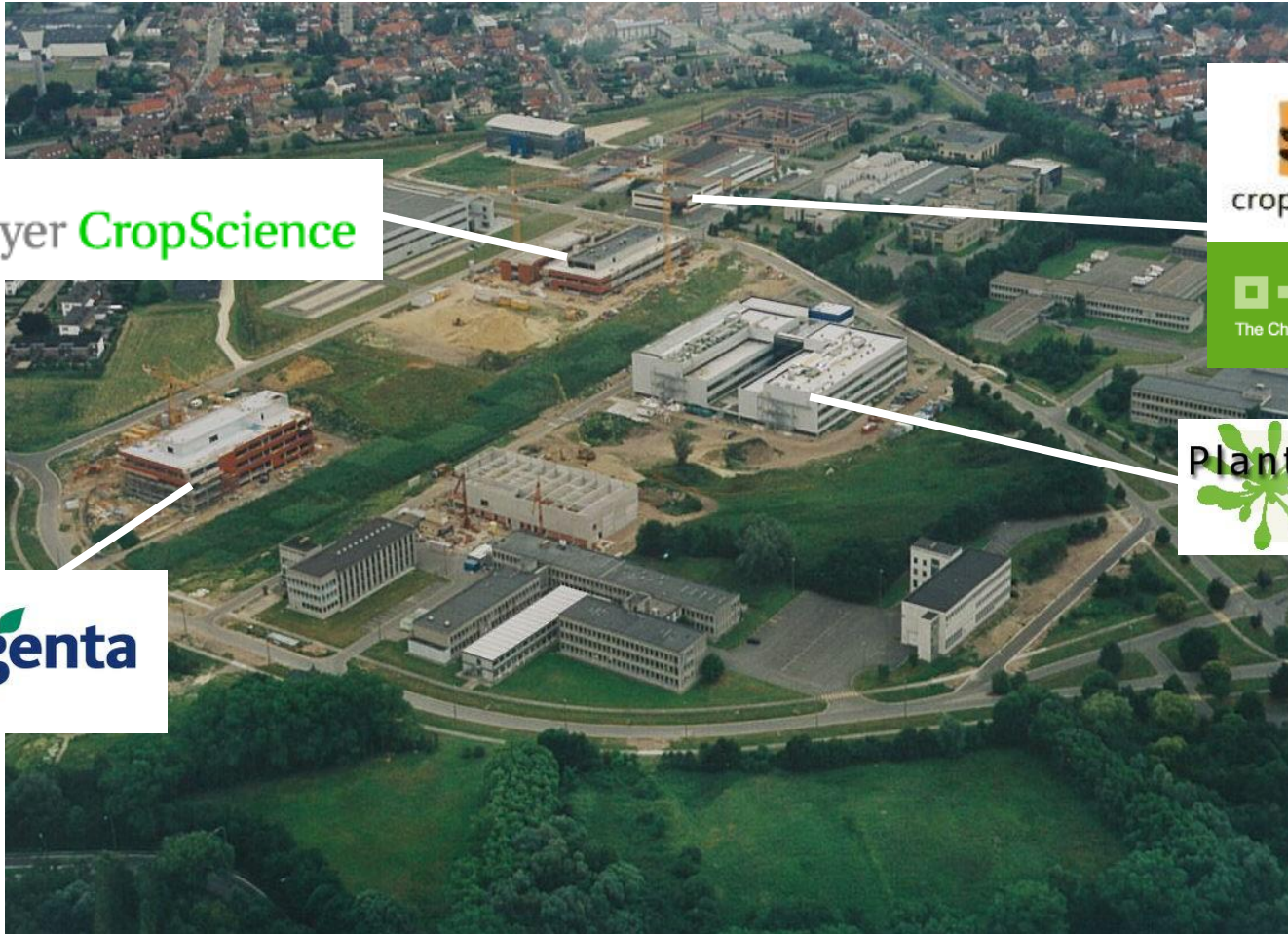


cropdesign

BASF
The Chemical Company

Plant Systems
Biology

syngenta



ACKNOWLEDGEMENT VIB

VIB ranking by SCI of 3042 Institutes

http://www.scimagoir.com/pdf/sir_2011_world_report_er.pdf

<i>Wr</i>	<i>RR CR Organization</i>	<i>Sector</i>	<i>Country</i>
1 1	Whitehead Institute for Biomedical Research	GO	USA
2 2	Howard Hughes Medical Institute	HL	USA
3 3	Broad Institute of MIT and Harvard	GO	USA
4 4	Cold Spring Harbor Laboratory	HL	USA
5 5	Salk Institute for Biological Studies	HL	USA
6 6	J. Craig Venter Institute	HL	USA
1 1	European Molecular Biology Laboratory Heidelberg	GO	DEU
7 7	Institute for Systems Biology	HL	USA
8 8	Novartis Institutes for Biomedical Research	CO	USA
0 2 1	Wellcome Trust Sanger Institute	HL	GBR
1 9 9	Scripps Research Institute	HL	USA
2 1 1	Walter and Eliza Hall Institute of Medical Research	HL	AUS
3 2 2	Garvan Institute of Medical Research	HL	AUS
4 10 10	The Rockefeller University	HE	USA
5 3 2	Cancer Research UK	HL	GBR
6 11 11	F. Hoffmann-La Roche, Ltd.	CO	USA 2
7 4 1	Flanders Interuniversity Institute for Biotechnology	GO	BEL
8 5 1	Centro Nacional de Investigaciones Oncologicas	HL	ESP
9 6 3	Medical Research Council	HL	GBR
0 12 12	Dana Farber Cancer Institute	HL	USA

