Katia R. M. Leite, M.D. PhD.

Vice President and Chief Science Officer

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katiaramos@genoabiotec.com.br

Contents

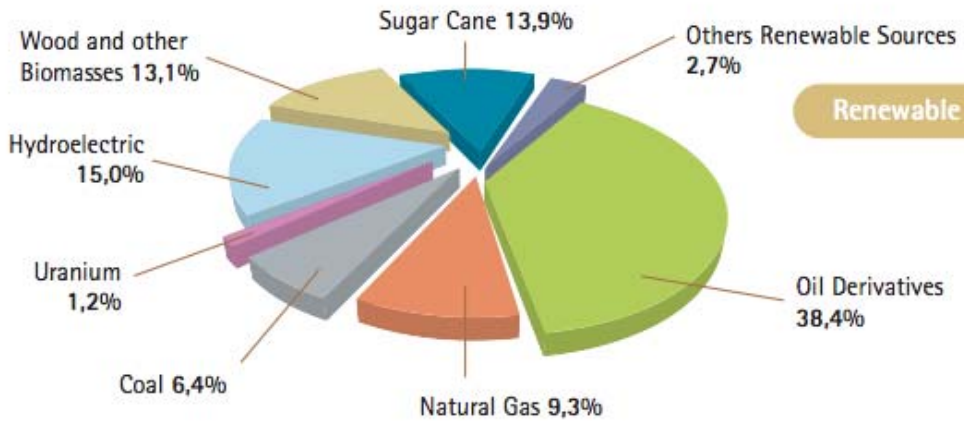
- Biotechnology in Brazil
- Genoa Biotecnologia

Innovation

- Human Resources
- Capital
- Infrastructure

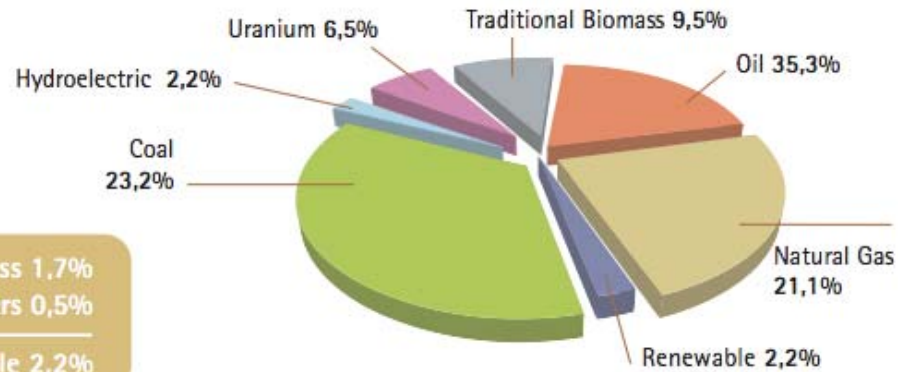
With the right tools, Brazil is able to make headlines at the brightest and more respected scientific environments

BRAZILIAN ENERGY MATRIX



Renewable 44,7%

WORLD ENERGY MATRIX



Modern Biomass 1,7%
Others 0,5%

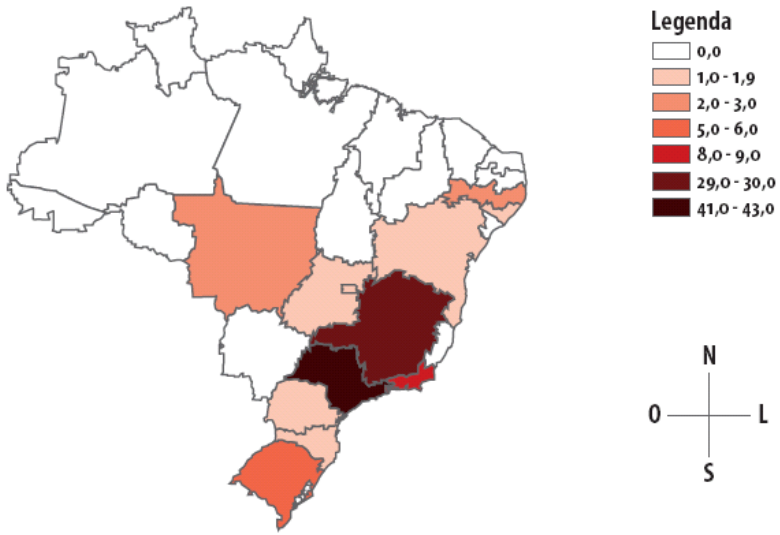
Renewable 2,2%

Source: Ministério de Minas e Energia

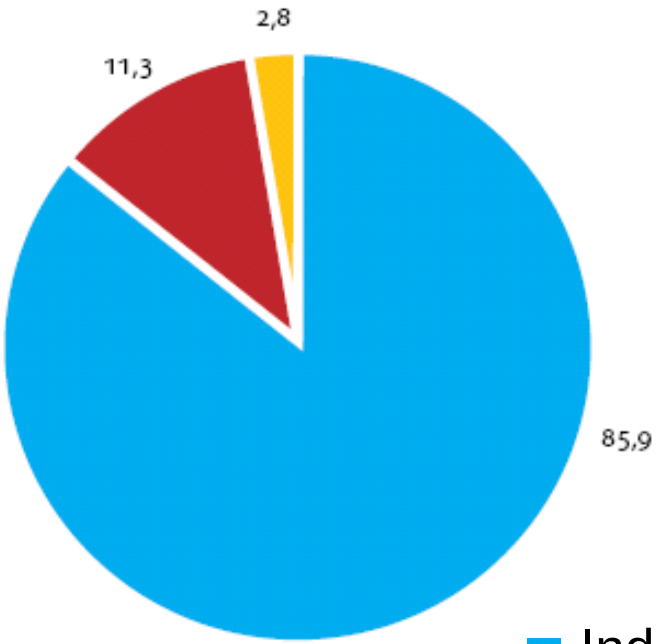
Biotech in Brazil

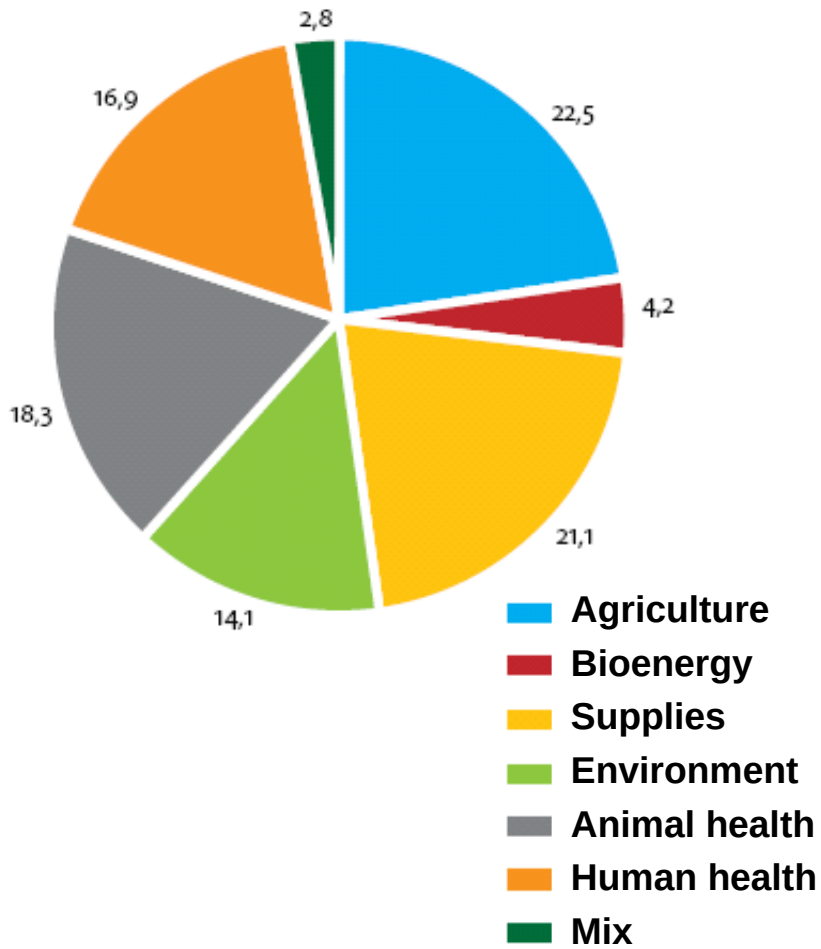
- Brazil
  - 71 Biotech Companies
  - 50.6% - less than 5 years
  - 35.2% - incubator spaces

Biominas report 2007



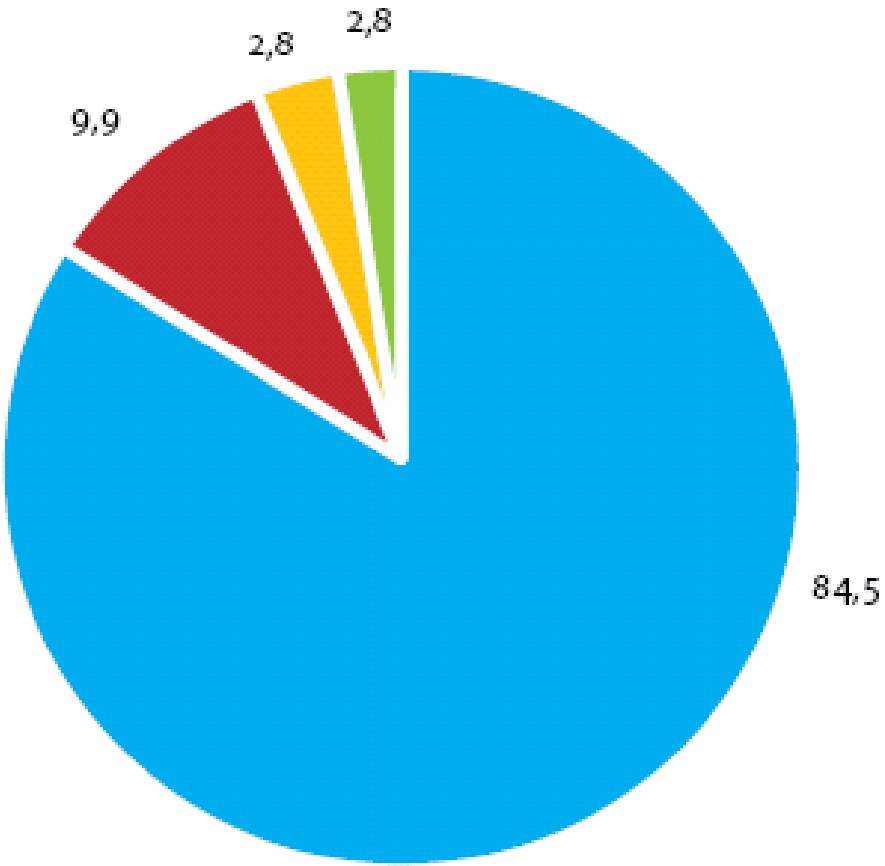
Biotech Distribution in Brazil





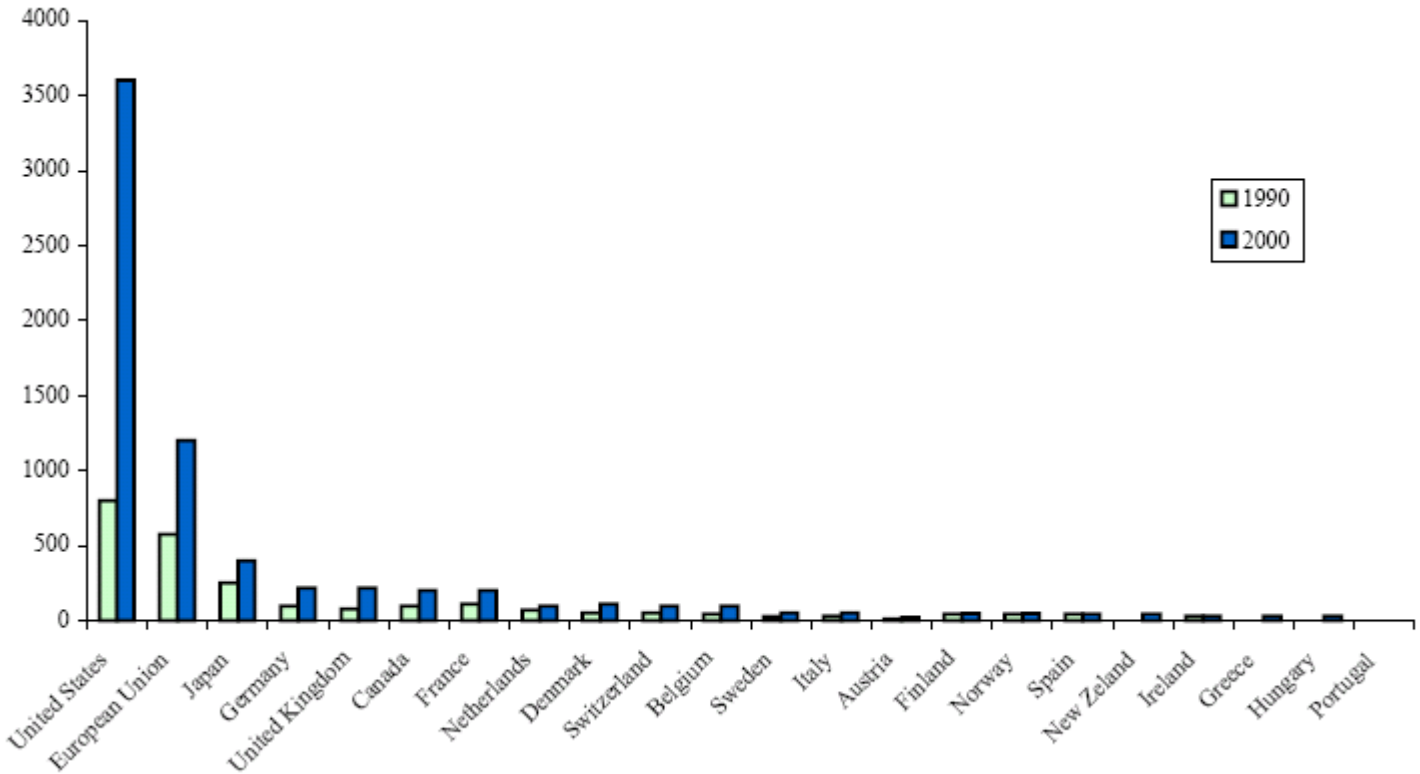
Biominas report 2007

Intellectual Property



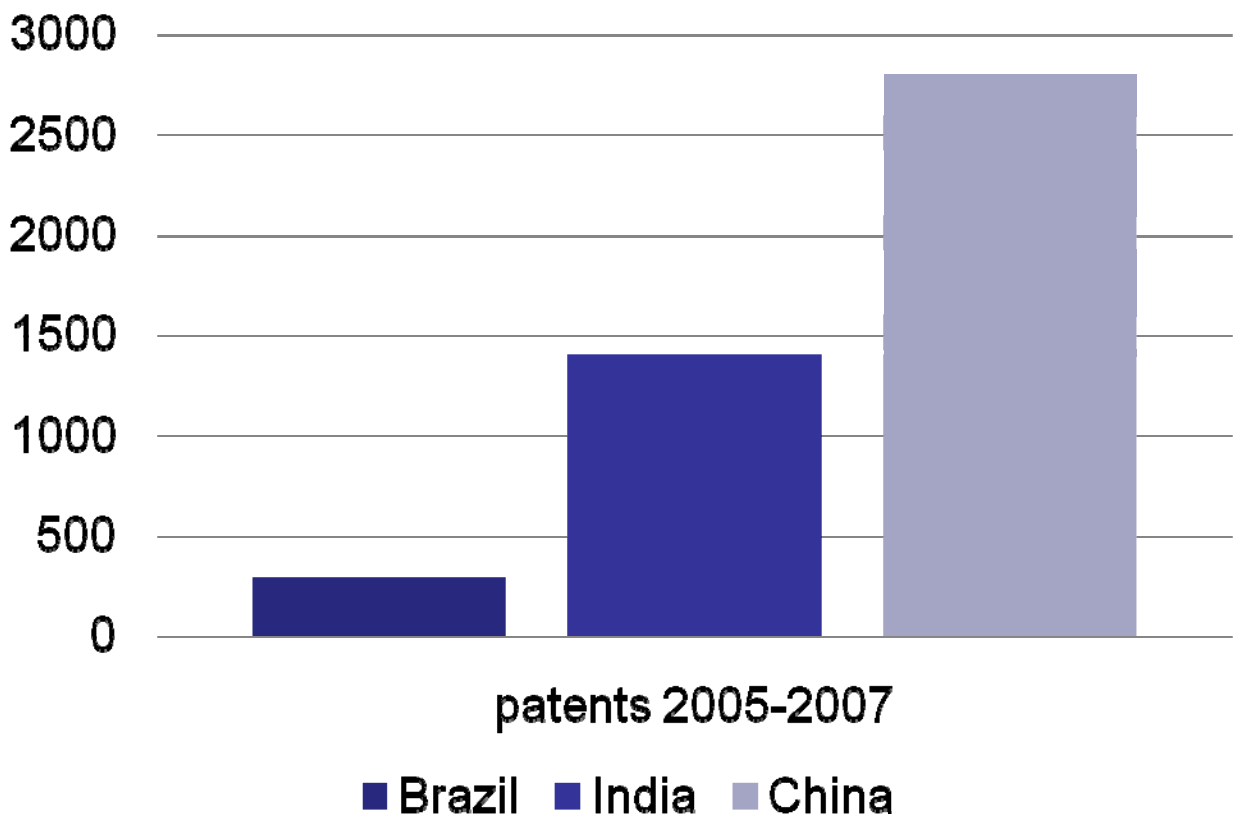
Biominas report 2007

Biotech patents – 1999 / 2000

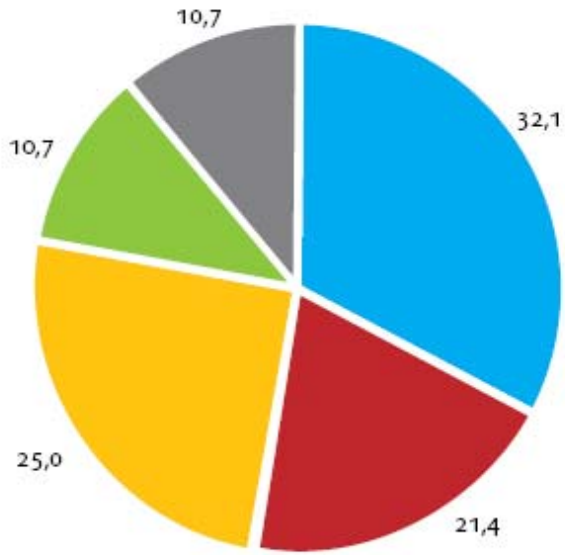


Allansdottir A et al. http://ec.europa.eu/enterprise/library

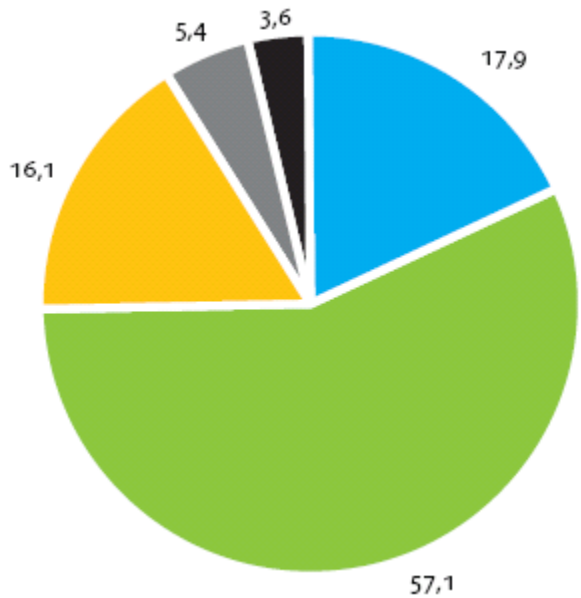
Intellectual Property



Size and Revenue

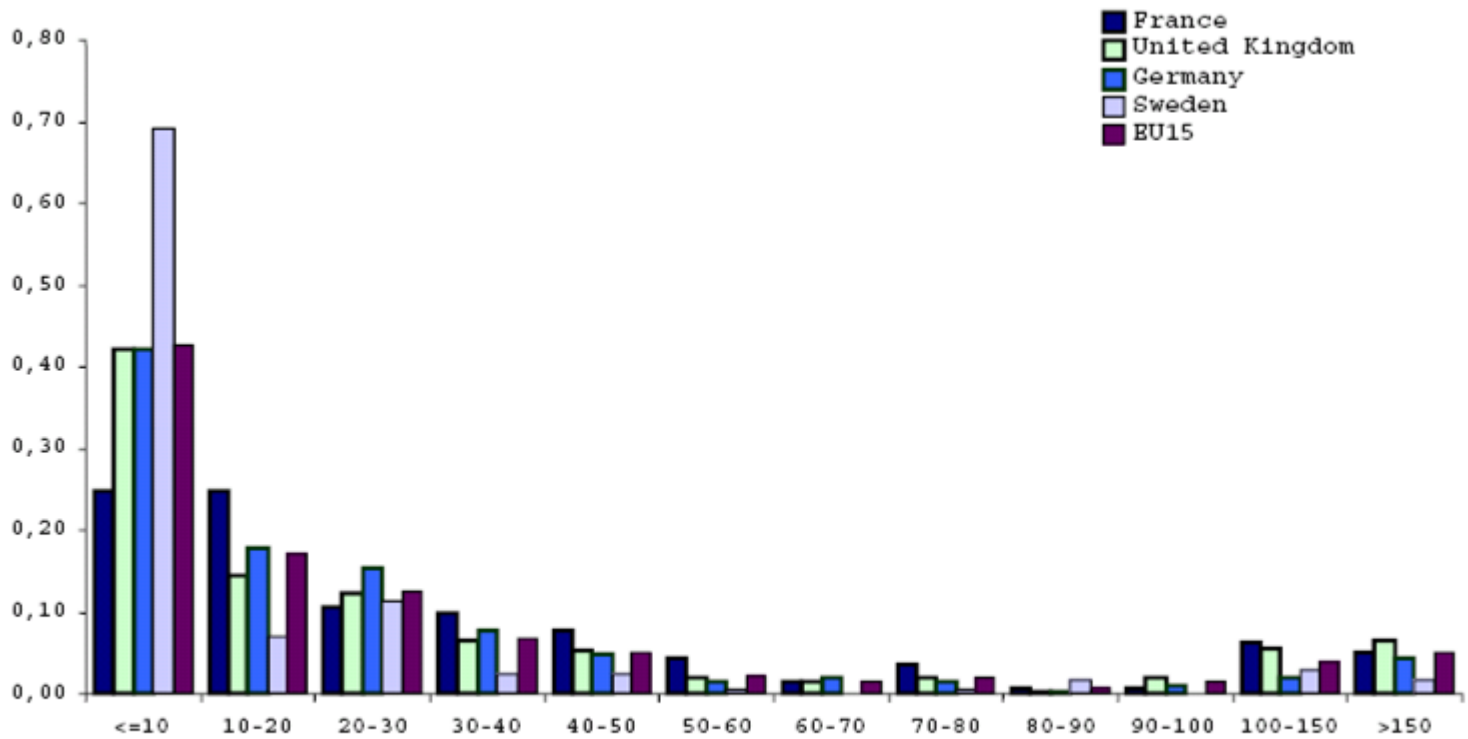


1 – 5 employees
6 – 9
10 – 19
20 – 49
> 50



None
Up to $625,000
$625 M to $6 MM
>$6 MM
Not declared

Size in Europe

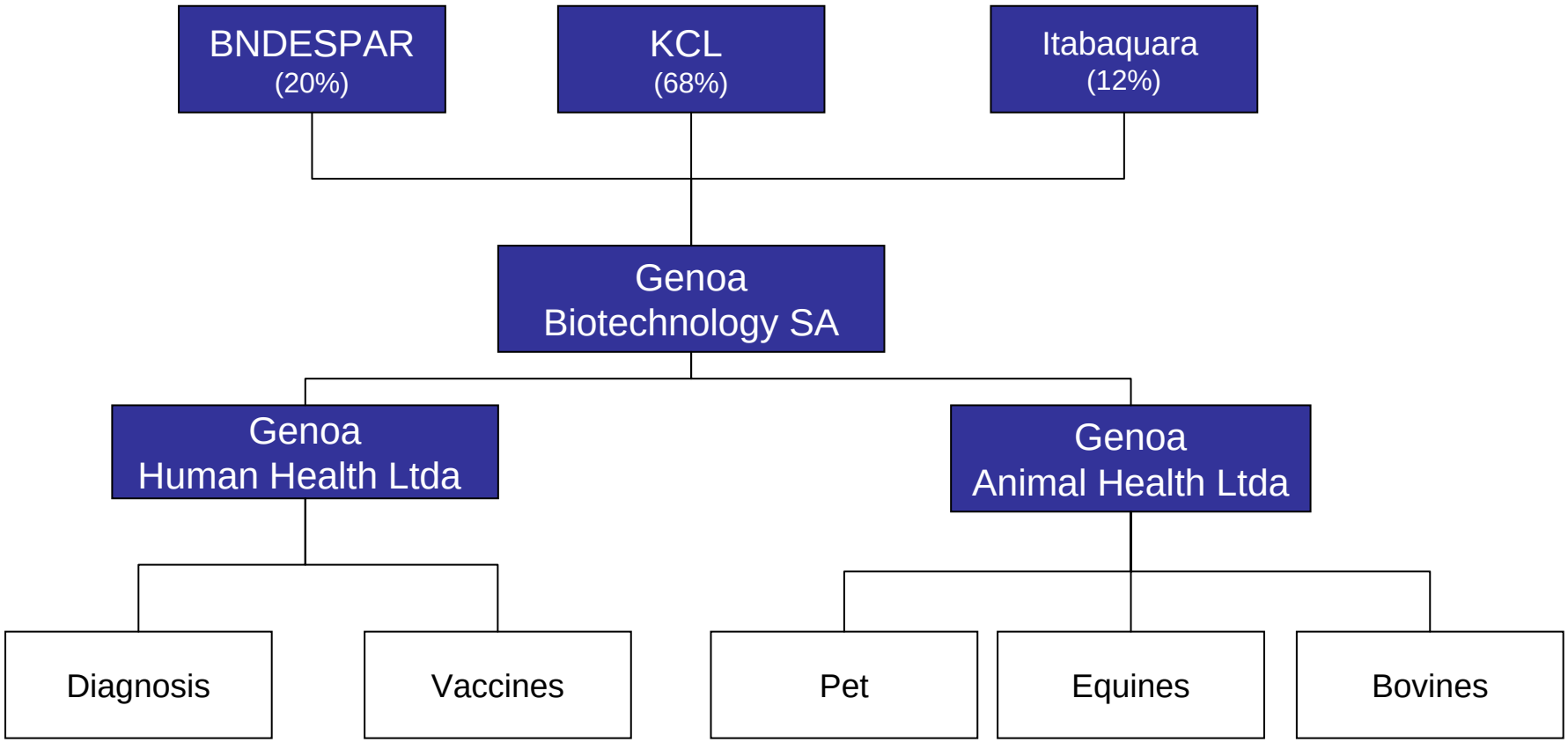


Source: Pammolli and Riccaboni, 2001, based on BID, University of Siena

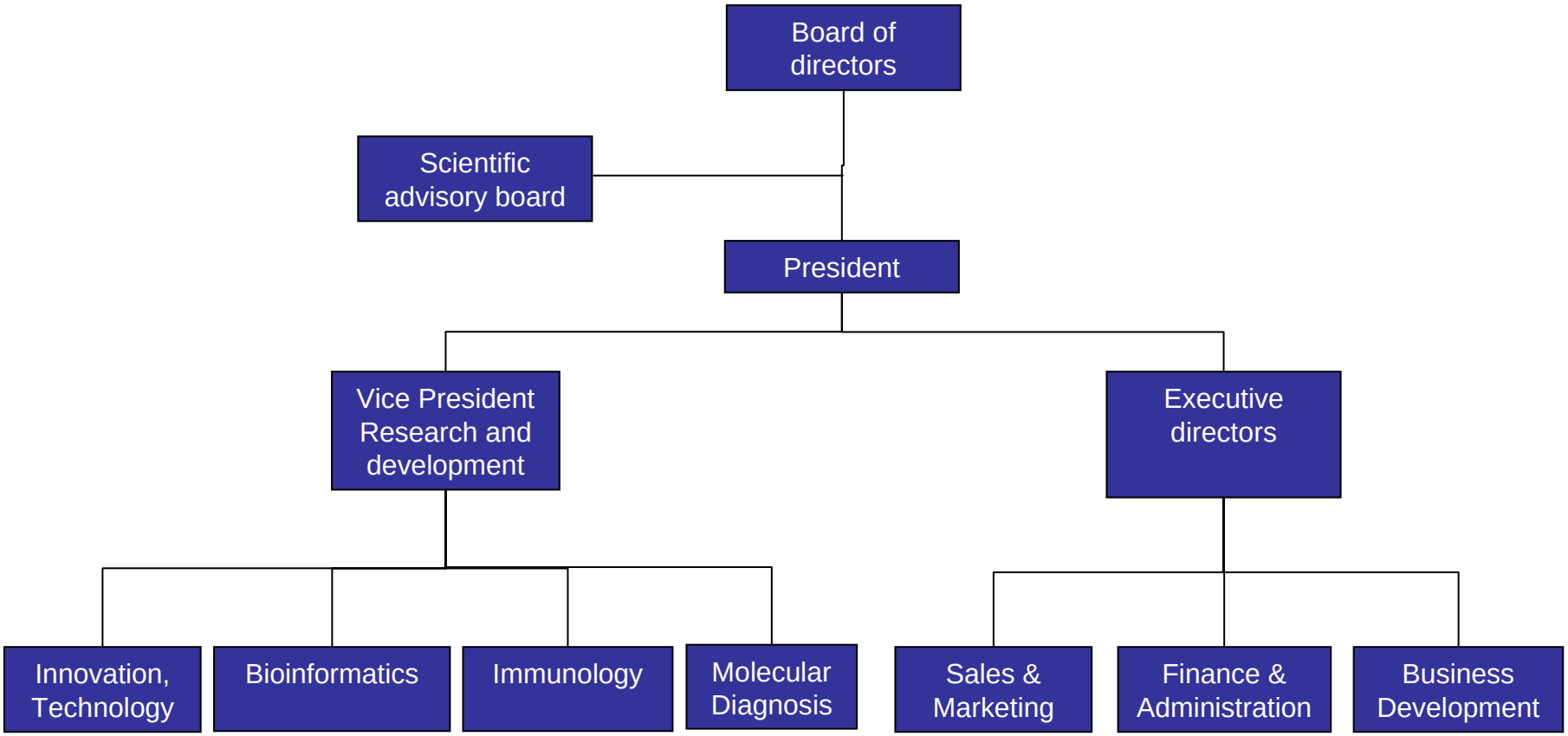
Genoa Biotecnologia

- Brazil based biotech company founded in 1999
  - Spin off from a Surgical and Molecular Pathology Laboratory
  - Main products
    - Therapeutic dendritic cell cancer vaccine
    - Molecular diagnosis

Shareholders



Organogram


Board of directors
Scientific advisory board
President
Vice President Research and development
Executive directors
Innovation, Technology
Bioinformatics
Immunology
Molecular Diagnosis
Sales & Marketing
Finance & Administration
Business Development

Genoa Biotecnologia

- Services
- Research and development
  - Human health
  - Animal health

Genoa Staff

Ana Paula Withmann

Financial Diretor, MBA IBEMEC

Katia R. M. Leite, M.D, PhD.

Vice President and Chief Science Officer. Head of the Laboratory of Medical; Investigation, Department of Urology, University of Sao Paulo Medical School

Juliana M. S. Canavez, PhD.

Senior Researcher; Doctor in Science by University of Sao Paulo

Flavio C. Canavez, PhD.

Director of Inovation and Technology; Head of the Molecular Laboratory; Pos Doc in Immunology and Molecular Biology in University of Stanford

Paulo S. L. Oliveira, PhD.

Chief, Department of Bioinformatics

Pos Doc in Ludwig Institute; Doctor in Phisics and Chemistry by University of Sao Paulo

Gilka F.Gattás, PhD.

Human Genetics, FISH; Head of the Department of Legal Medicine – University of Sao Paulo

Scientific Partners

J. Thomas August, M.D., PhD.

Professor of the Department of Oncology, Pharmacology & Molecular Science The Johns Hopkins University School of Medicine, Biophisics

Ernesto T.A. Marques, M.D., PhD

Research Associated, Department of Medicine Infectious Disease, Pharmacology & Molecular Science The Johns Hopkins University, Biophisics

Alberto J. S. Duarte, M.D., PhD

Responsible for the vaccines clinical trials ; Pos-Doc in Harvard Medical School; Head of the Laboratory of Medical Investigation in Immunology in the University of São Paulo Medical School

Stephen Moore, PhD

Chairman of Beef Genomics, Department of Agricultural, Food and Nutritional Science, Faculty of Agriculture, Forestry and Home Economics University of Alberta, Edmonton, Canada

Innovation

- Human resources √

Projects

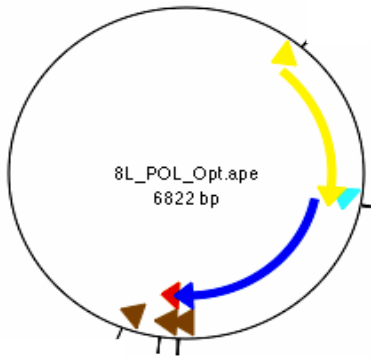
- Human health
  - LAMP/HIV therapeutic vaccine
    - Partner - Immunomic Therapeutics, Inc Gaithersburg, MD; Biomark LLC Baltimore; Light House Lamp, LLC, Baltimore.
    - Pre-IND approved by FDA
    - Pre-clinical studies finished
    - Clinical trial I/II in 2009

HIV/LAMP Therapeutic Vaccine

- Global market size (2007)
  - 33.2 million infected total
  - 2.4 million infected in the year
  - 2.6 million under ARV treatment
- Preventive vaccines not effective
- Antiretroviral treatment
  - Resistance
  - Severe side effects

HIV/LAMP Therapeutic Vaccine

- Plasmid 8L containing Lysosomal Membrane Associated Protein (LAMP) coding sequence
- Strong immunogenic construction
- Express HIV/LAMP chimeric proteins
- Easy production
- Stability
- Safety construction



HIV/LAMP Therapeutic Vaccine

- Patents
  - LAMP/HIV constructs (3)
  - Investments required - $ 5 MM

Projects

- Animal Health: Bovine Molecular Markers for Commercial Traits
  - Partners
    - University of Alberta, Edmonton, Canada
    - Jacarezinho Agropecuária, Inc. (Cattle Breeders)
    - Quilombo Enterprise (Bovine Elite Selection)
    - Bertin Group (Slaughter House and Meat Processing)
    - OuroFino Pharmaceutics, Inc.
  - SNP High throughput screening using Illumina platform (over 50.000 SNPs), finished
  - Bioinformatics analysis finish by end of 2008
  - Patents: inumerous
  - Investments required - $ 2 MM

Intellectual Property

- Patents in Brazil
  - INPI
  - Law 9279/96
  - 20 years
    - Process up to 7 years
    - Patent valid for at least 10 years
  - Signatory of Patent Cooperation Treaty since 1978
    - 12 months to extend the patent to others 185 countries members of PCT
  - Costs
    - $6,000

Genoa Patents

1. Retinoic acid applied to mononuclear cell culture in vitro - (PI 0702057-0) (Author: Juliana M. Sousa Canavez)
2. Hybrid Dendritic-Tumor cell Vaccine for the treatment of renal cell carcinoma (Protocol 0000920800662271) (Authors: Juliana M Sousa Canavez, Katia R.M. Leite, L.H. Camara Lopes).
3. Hybrid Dendritic-Tumor Cell Vaccine for the treatment of melanoma (required) Authors: Juliana M Sousa Canavez, Katia R.M. Leite, L.H. Camara Lopes).
4. Transfection of Dendritic cells with RNA for production of vaccines (required) (Authors: Juliana M de Sousa Canavez, Flávio C. Canavez, Kátia R. M. Leite, L.H. Camara Lopes).
5. The use of Pentavalent Antimonial as immune-modulator – (PI 0300796-0) (Authors: L. H. Camara Lopes and J. A. Barbuto)
6. Device for collection of genetic specimens in clinics and homes (PI 0705475-0) (Authors: L.H. Camara Lopes – Kátia R. M. Leite)
7. Diagnosis of prostate cancer using the levels of expression of PGC and PSMA (PI 0705469-6) (Authors: Katia R.M. Leite, Juliana M de Sousa Canavez, Alberto Azoubel Antunes, Miguel Srougi)
8. System used for the evaluation of genetic diversity applying specific markers (PI 0704257-4) (Authors: Paulo Sergio Oliveira – Otávio J. E. Pereira)
9. Therapeutic vaccine for Sarcoid tumor in equines (PI 0700924) (Author: Cristina de Oliveira Massoco)
10. Therapeutic vaccine for melanoma in equines (PI0800804-3)(Author: Cristina de Oliveira Massoco)
11. Method to obtain Dendritic cell from the peritoneum of equines to be used in immunotherapy (PI 0704258-2)(Author: Cristina de Oliveira Massoco)

Innovation

- Human resources √
  - Projects
  - Intellectual property

Funding Raised

- $ 11 MM+ invested to date
  - Initial capital $ 4 MM
  - Seed Money $ 1 MM
  - BNDES $ 3 MM
  - FINEP $ 3 MM

Challenges

- Investments by governmental agencies
  - Time
  - Guaranties
  - Limitations

Investments by Governmental Agencies

- Advantages
  - Low interest rates
    - Innovation – 1.25% / year
  - Usually with grace period and long tenors
  - Brings credibility to the project / enterprise

Investments by Governmental Agencies

- Disadvantages
  - Seed money
    - BNDES – CRIATEC – Created only in Jan 2007
    - $50 MM
    - Only 4 projects (too much bureaucracy!)
  - Long time between the presentation of the project to money release
  - Guaranties
    - Bank collaterals

      Interest rates – no lower than 3% / year
    - Money released as the project is ongoing, only with short term targets met (no long term view)

Investments by Venture Capital

- “Risk investment”
- No culture for biotechnology
- With historical high interest rates there is little incentive and culture for long term investments. You make 15% a year on money market. Why take risk?

Innovation

- Human resources √
- Capital ×

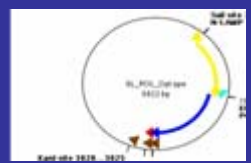
Infrastructure

- Location
  - Policies
- Supplies and equipment acquisitions
  - Importation difficulties
    - Time
    - Regulatory affairs
  - High prices
  - High taxes

Innovation

- Human resources √
- Capital ×
- Infrastructure ×

Genoa Timeline

1999	2004	2007	2008	2009	2010
Genoa foundation	 Dendritic cell Therapeutic Cancer vaccine Bovine genotyping Molecular diagnosis for pets and humans	 BNDES Investments LAMP Licensing Research Agreement Genoa/Alberta Bovine breeders	FINEP Investments Pre-IND approval by FDA for LAMP/HIV therapeutic vacc Patent LAMP/HIV constructs LAMP/HIV pre clinical stage finished 	LAMP/HIV Vaccine clinical trial I/II Bovine Genetic markers Finished LAMP/renal cell cancer pre clinical studies	Clinical trial phase III LAMP/HIV Clinical trial Phase I/II LAMP/renal cell cancer Commercialization of bovine genetic markers

Genoa Goals

- IPO
  - 3 to 5 years
- Constant analysis of opportunities on Merge & Acquisitions