

An overview on Biotechnology

**Market need
and
job opportunities**

By Family of Biotechnology, MSA



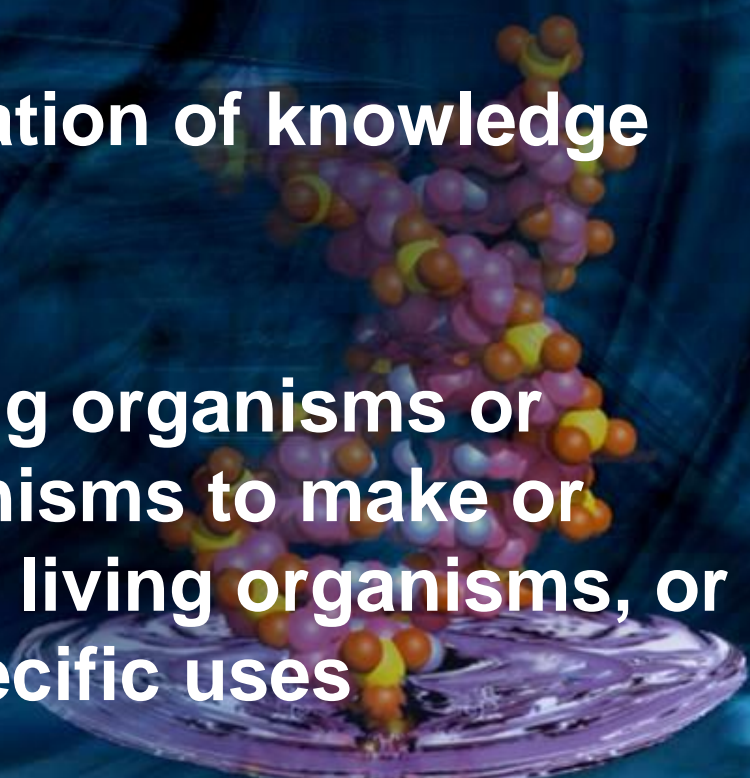


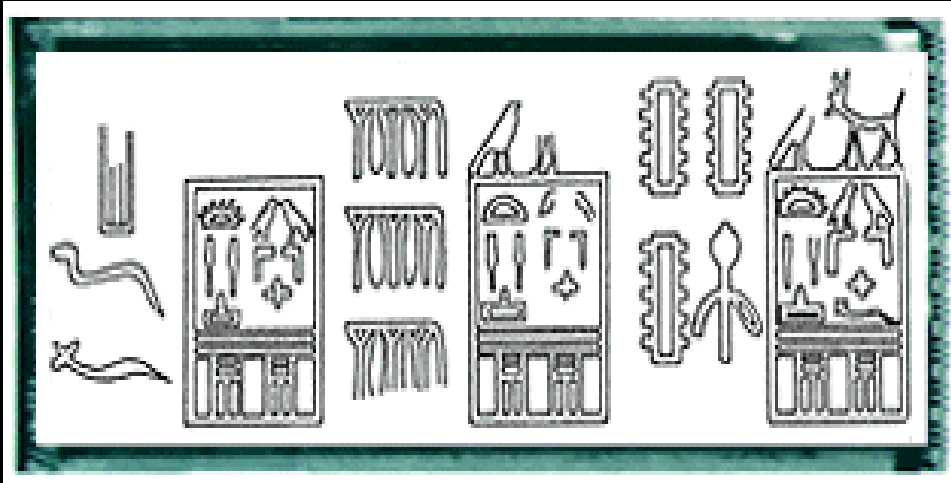
What is Biotechnology?

The use of living organisms to make or improve a product

- Bio (life)
- technology (the application of knowledge for practical use)

✦ Any technique that uses living organisms or substances from those organisms to make or modify a product, to improve living organisms, or to develop organisms for specific uses

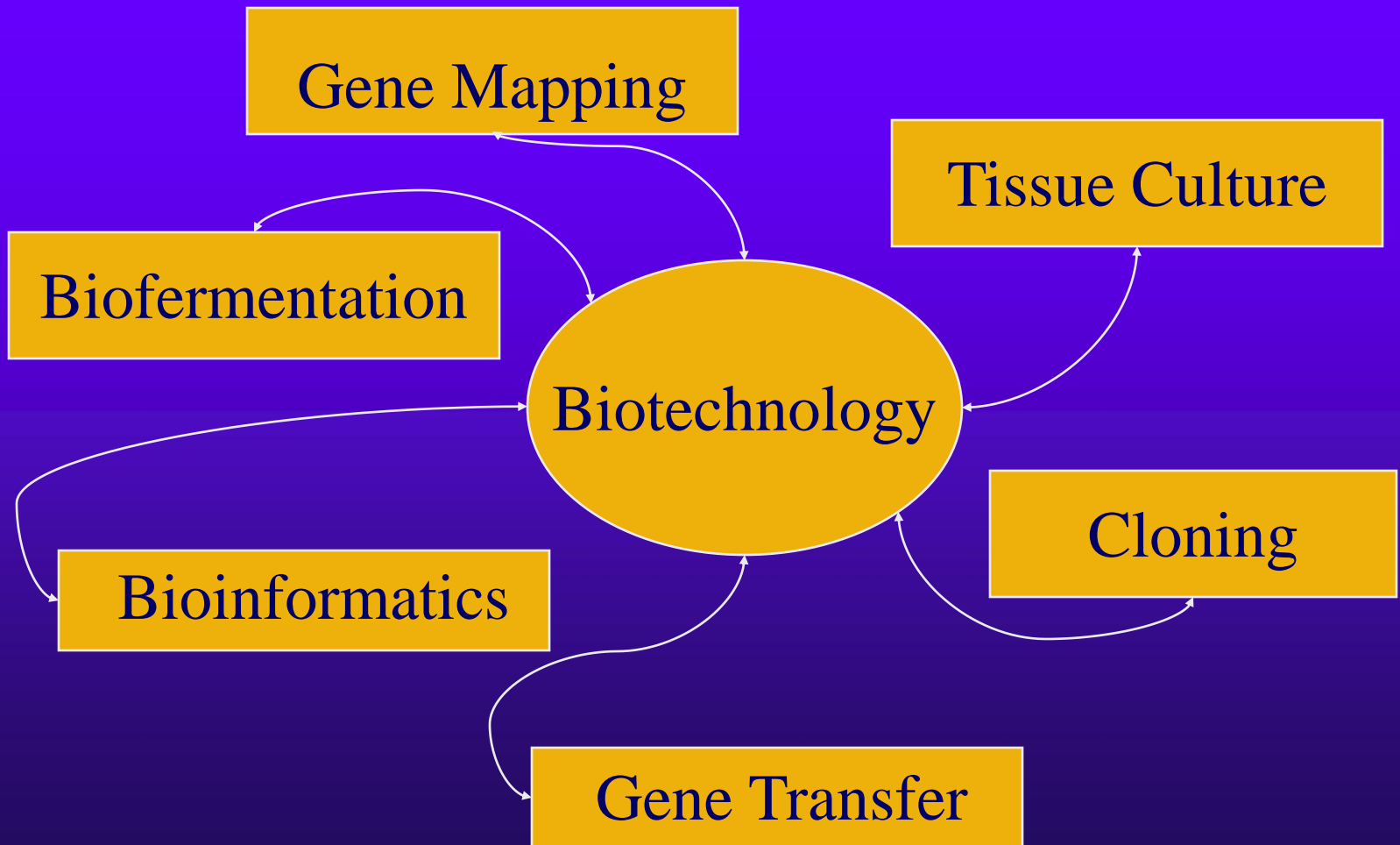




Ancient Egyptian drawing of a cylinder seal impression on a jar stopper bearing the name of Khasekhemwy, a Dynasty 2 pharaoh. It shows a grapevine trained to run along a trellis or arbor. (around 2700 b.c.)

How Old is Biotechnology?

Techniques



Fields of Biotechnology

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graph TD; A[Fields of Biotechnology] --> B[Medical]; A --> C[Agricultural]; A --> D[Industrial]; C --> E[Environmental]; C --> F[Pharmaceutical]; G[DNA Forensics];
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Medical

Agricultural

Industrial

Environmental

Pharmaceutical

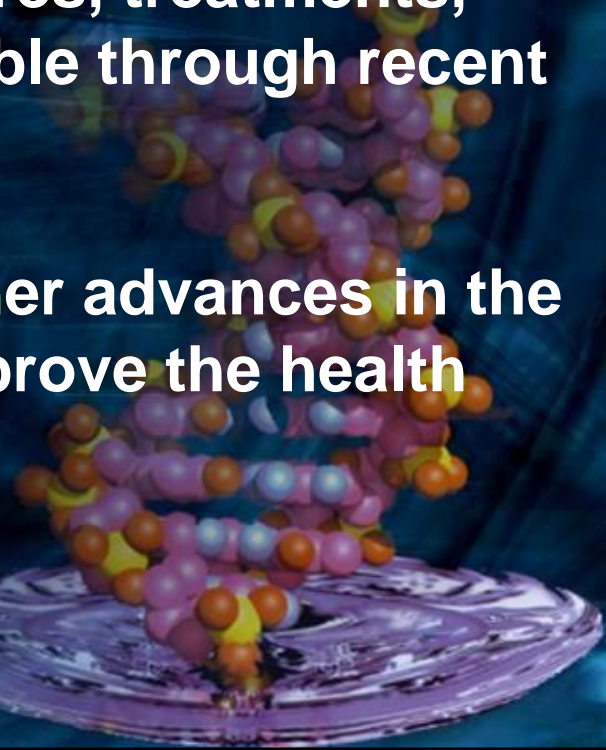
DNA Forensics

Medical Biotechnology

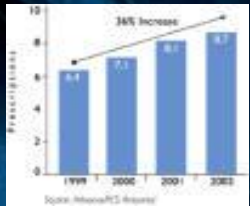


Improving Human Health. Millions of people around the world are already living longer, healthier lives thanks to cures, treatments, and diagnoses made possible through recent advances in biotechnology.

Over the next century, further advances in the biosciences promise to improve the health and lives of billions more.



Pharmaceutical Biotechnology



- Main focus of new drug development
- Careers in biotech industry
- Careers in big pharmaceutical companies

Biotech Drug Development

- 371 new biotechnology medicines in development for more than 200 diseases.
- 96 FDA approved biotechnology medicines.

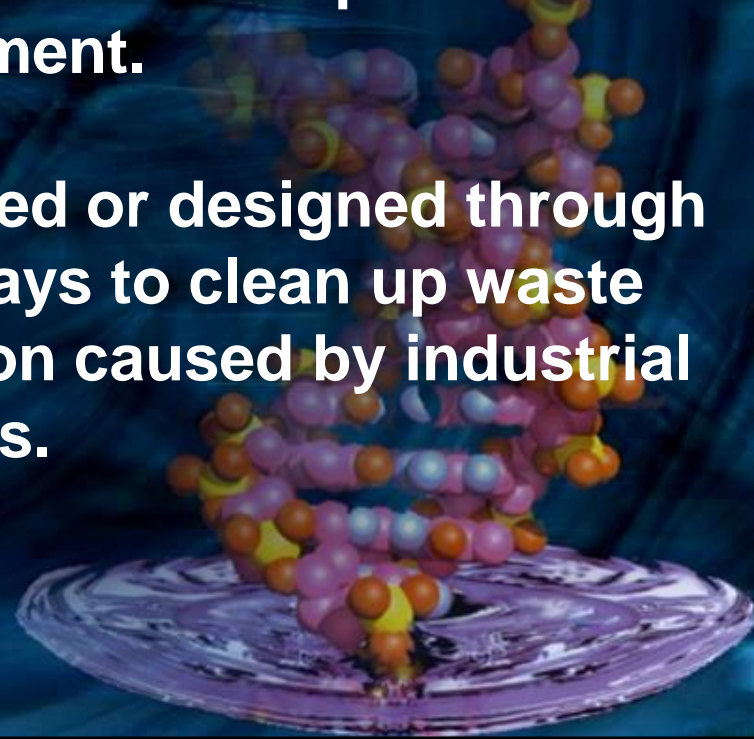


Environmental Biotechnology

Meeting Our Energy and Environmental Needs.

Biofuels represent an important avenue to reduce dependence on oil and improve the quality of our environment.

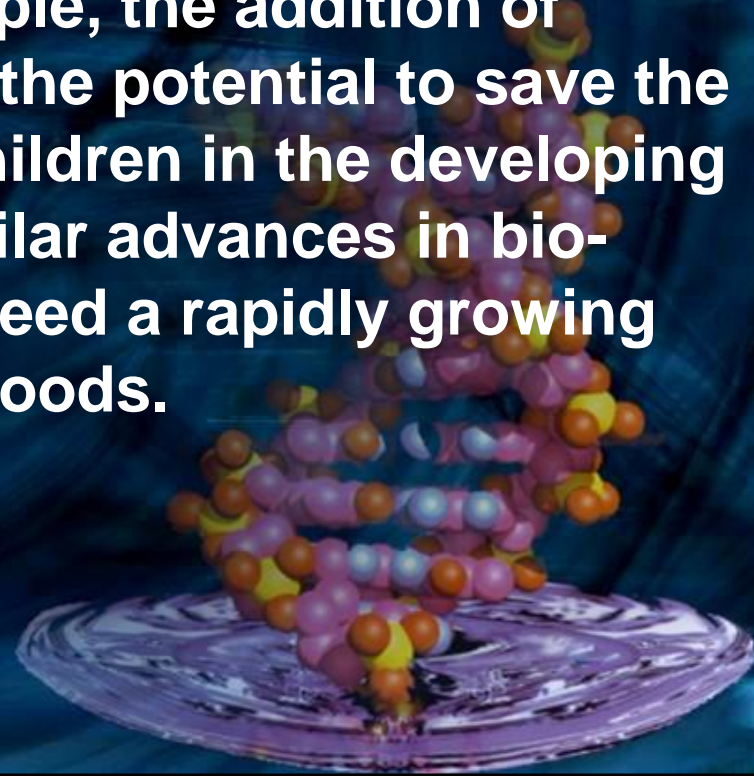
Also, enzymes identified or designed through biotechnology offer ways to clean up waste while reducing pollution caused by industrial processes or accidents.



Agricultural Biotechnology



Ending Hunger. Agricultural biotechnologies are significantly increasing crop yields while reducing reliance on chemical herbicides and pesticides. For example, the addition of vitamin A to rice has the potential to save the lives of millions of children in the developing world each year. Similar advances in bio-agriculture will help feed a rapidly growing world with healthier foods.



The Application of Biotechnology to Industrial Sustainability



Manufacture of Vitamin B₂ (Hoffman La-Roche, Germany)



Production of Antibiotic



Synthesis of Polyester Adhesives



Vegetable Oil Degumming (Cerol, Germany)



Ethanol from Biomass (Iogen, Canada)

Security and war

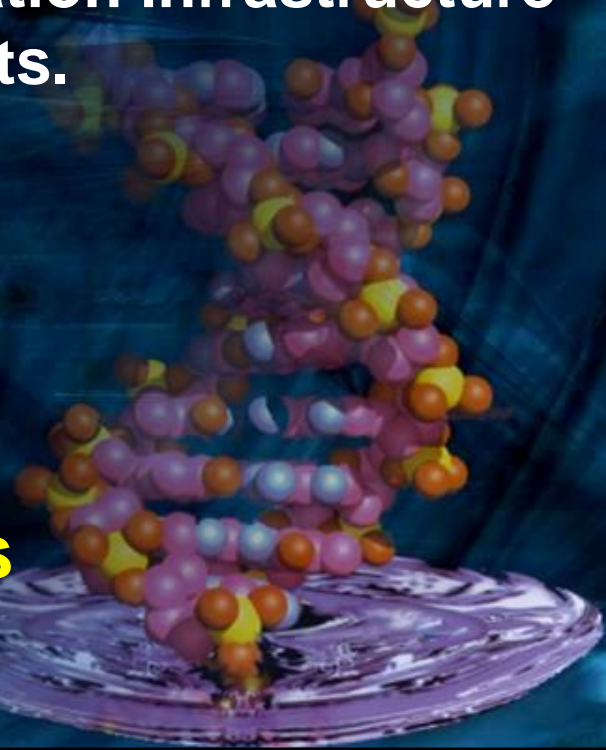


Defending Our Homeland. Vaccines, sensors, and biometric devices will be a critical part of our security and authentication infrastructure for homeland defense efforts.

DNA Finger Print

Forensic sciences

Biological Weapons



Career opportunities in Biotechnology

MSA Faculty of Biotechnology programme prepares you for many exciting careers in medical, pharmaceutical, agricultural, environmental, industrial and bio-technological sciences .

- **Clinical Human Genetics (molecular & cancer genetics and gene therapy)**
- **Genetic counseling**
- **Clinical molecular diagnostic laboratories (public, private and your own lab)**
- **Pharmaceutical industry**
- **Biotech industry**
- **Plant genetics and tissue culture**
- **Food industry**
- **Forensic sciences**
- **Bioinformatics and biostatistics companies**
- **Environmental biotechnology organizations**
- **Research institutes**
- **Academic careers**

Faculty of Biotechnology Good Practices



Training

Inside Egypt

- Agricultural Genetic Engineering Research Institute
- National Institute of Cancer
- VACSERA institute
- Mubarak City
- Palm Tissue Culture Lab.
- Horticulture Institute
- Egyptian Linear Alkyl Benzene
- California project
- National Research Center
- Theodor Belharz
- Petroleum Companies
- Virus isolation and detection

Outside Egypt

• one month in the International Center for Agricultural Research in the Dry Areas (ICARDA)- Syria.

• Ten students will take a training for three weeks in the university of Greenwich this summer.

Faculty of Biotechnology Good Practices

Conferences



MSA university, faculty of Biotechnology hosted (ICAB 08), the first international conference for the applications of biotechnology. 350 scientists across the world were participated in the conference



MSA university, faculty of Biotechnology is planning to host (ICAB 09), the second international conference for the applications of biotechnology.

Graduation Projects



Places inside Egypt

National institute of Cancer

VACSERA institute

Teodore Bilharz Research Institute.

Faculty of Veterinary Medicine-Cairo University

Agricultural Genetic Engineering Research Institute

MSA laboratories

Biotechnology Centre – Cairo University

Private lab for stem cell research

Places outside Egypt

NAT lab in Artemis Hospital in Gurgaon, India

Graduation Projects

Menna-t-allah El Hefnawy



Agricultural Genetic
Engineering Research
Institute

Isolation and
characterization of Cab 8
gene from wild Vicia
Cinera species

Nucleotide - Mozilla Firefox
http://www.ncbi.nlm.nih.gov/nucleotide/238858955

NCBI Nucleotide

Search Nucleotide for [] Go Clear

Format: GenBank FASTA Graphics More Formats

GenBank: AB505862.1

Vicia cinerea Cab8 mRNA for chlorophyll a/b binding protein, complete cds

Features Sequence

LOCUS AB505862 801 bp mRNA linear PLN 04-JUN-2009
DEFINITION Vicia cinerea Cab8 mRNA for chlorophyll a/b binding protein, complete cds.
ACCESSION AB505862
VERSION AB505862.1 GI:238858955
KEYWORDS .
SOURCE Vicia cinerea
ORGANISM Vicia cinerea
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons; rosids; eurosids I; Fabales; Fabaceae; Papilionoideae; Fabeae; Vicia.
REFERENCE 1
AUTHORS Abou-Ali, R.I., **EL-Hefnawy, M.M.** and Nada, A.K.
TITLE Isolation and characterization of Cab8 gene from wild Vicia cinerea sp
JOURNAL Egypt. J. Genet. Cytol. (2009) In press

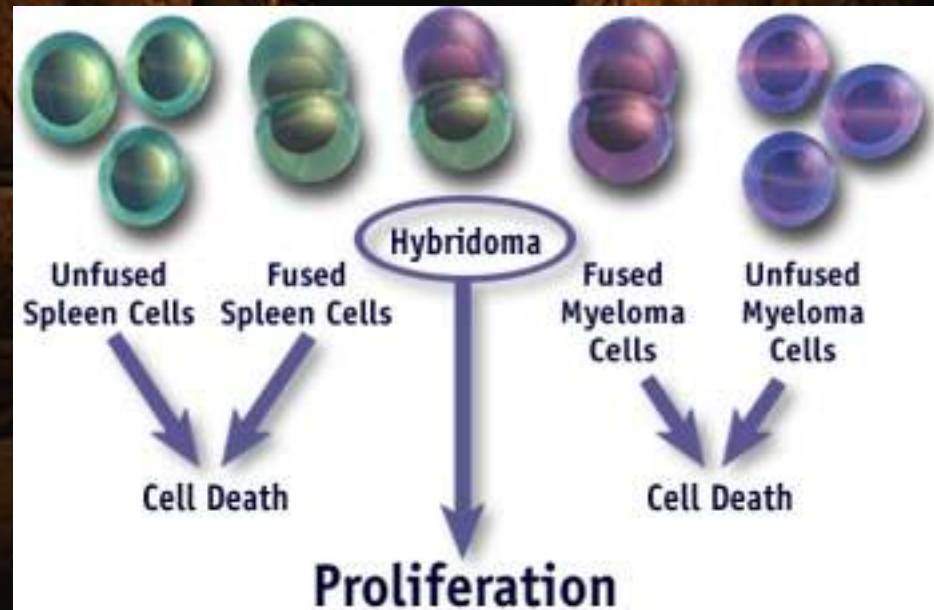
Graduation Projects

Nora Atta



VACSERA

Selection, characterization and production of monoclonal antibodies for HCV nanostructural protein NS3



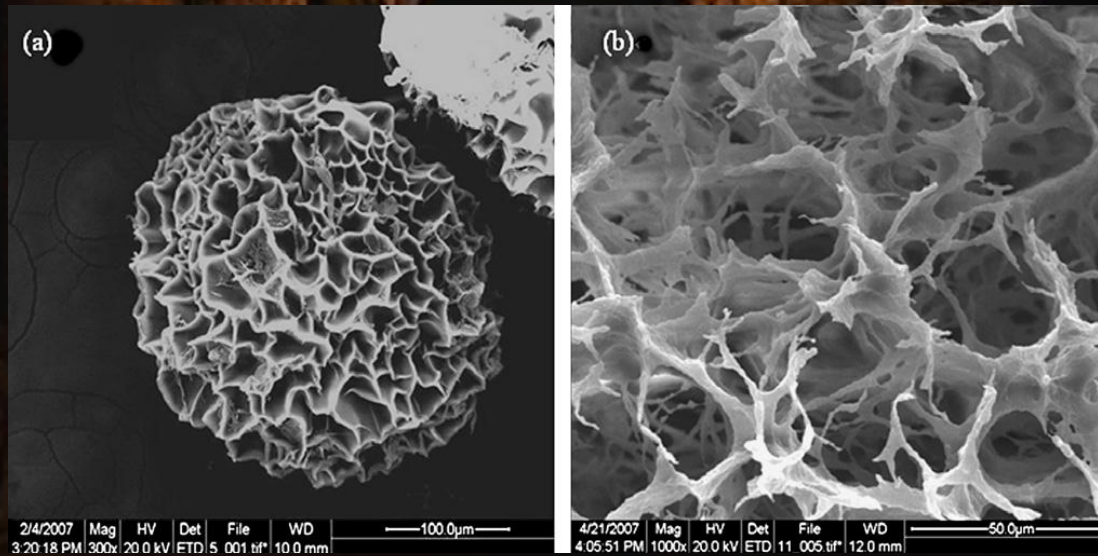
Graduation Projects

Yasmine William



VACSERA

Multifunctional implantable tissue engineering chitosan scaffold for skin regeneration

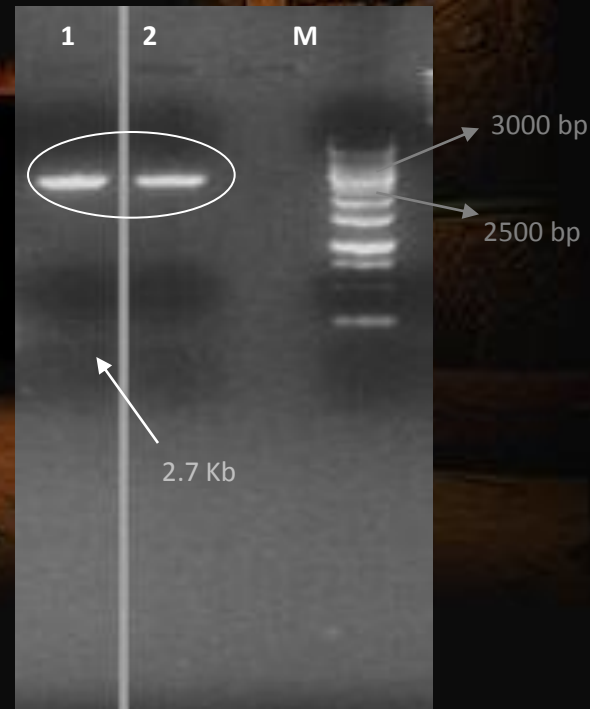


Graduation Projects

Aicha Tigany

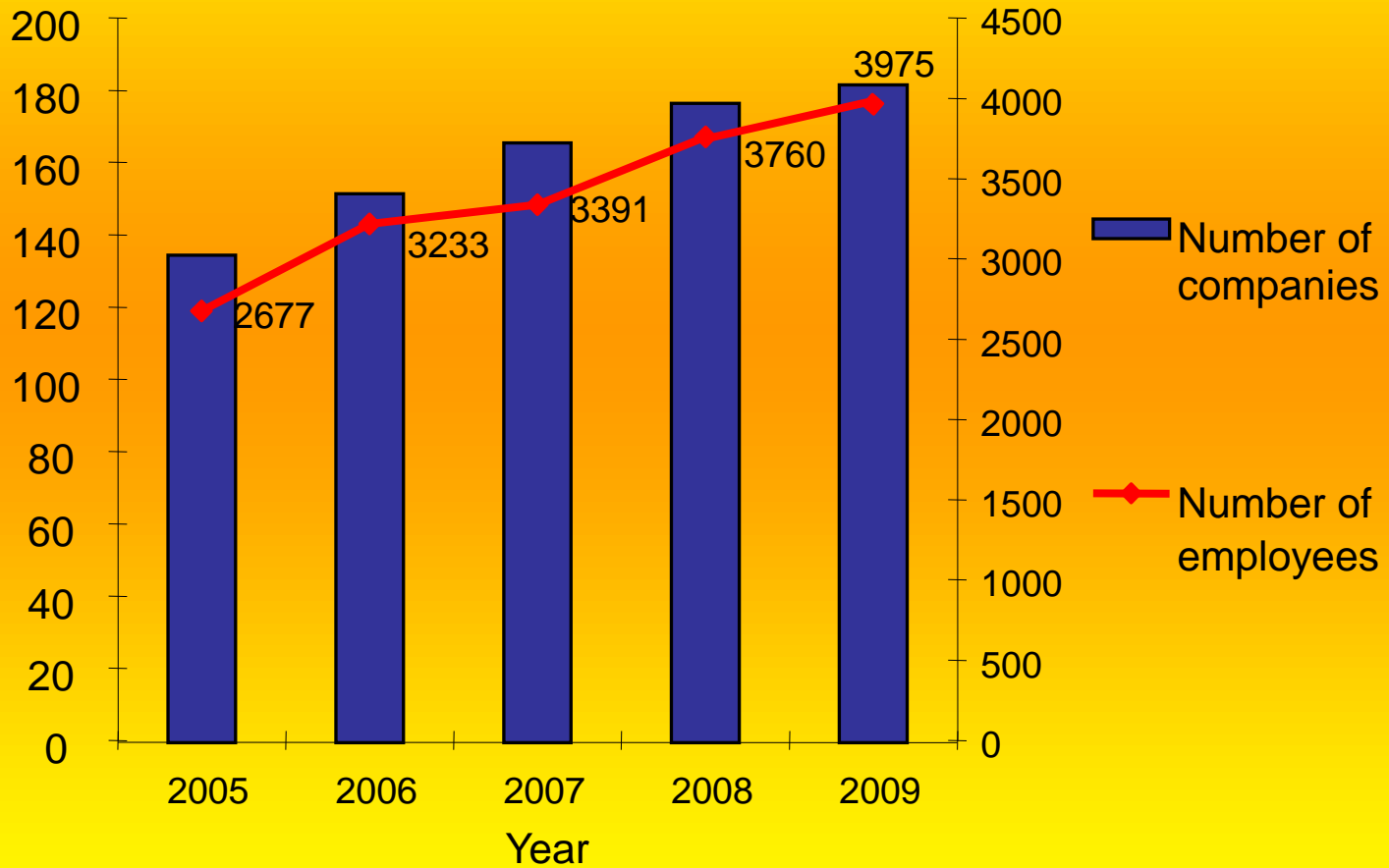
Agricultural Genetic Engineering Research Institute

Isolation and Molecular Characterization of GlnB gene from Nitrogen fixing
Azospirillum brasilense NO40



Number of Companies and Employees

Salary Ranges From \$60k - \$80k per year



Sites posting job opportunities in Biotechnology

- <http://naturejobs.nature.com/>

Found 576 jobs
Category: Biotechnology

- <http://www.monster.com/>

Found 1009 jobs
Category: Biotechnology

- <http://www.careerbuilder.com>

Found 4970 jobs
Category: Biotechnology

- <http://www.medzilla.com/>

Found 725 jobs
Category: Biotechnology

jobs in Biotechnology

- **Nora Atta**



She is working as an operation manager in the 1st cord blood stem cell bank in Egypt. (She start working with salary before graduation)

- **Menna-t-allah El Hefnawy**



She is working as an assistant researcher in the Agricultural Genetic Engineering research Institute (AGERI).

- **Aicha Tigani**



She is working as an assistant researcher in the Agricultural Genetic Engineering research Institute (AGERI).

jobs in Biotechnology

- Nour Eldin Hussein

External relation manager, AIESEC Egypt



- Ahmed Megawer

M.Sc. Scholarship at AUC



- Poussy Sayed

She is working as a researcher in the research and development department in Johnson and Johnson company



- Nahla Abd Elmoneom

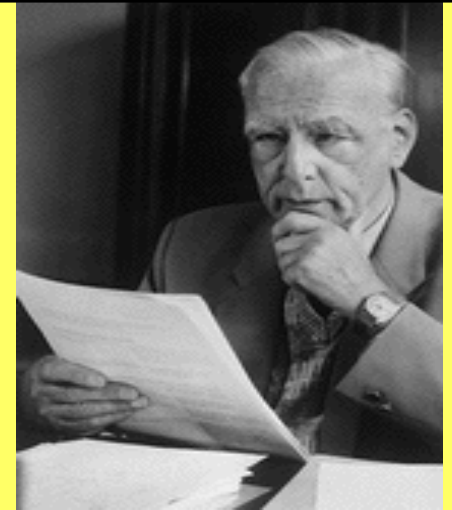
She is working as an assistant researcher in the Palm Tissue Culture Laboratory (3rd level student).



Anton van Leeuwenhoek
Discovered cells



Gregor Johan Mendel
Discovered genetics

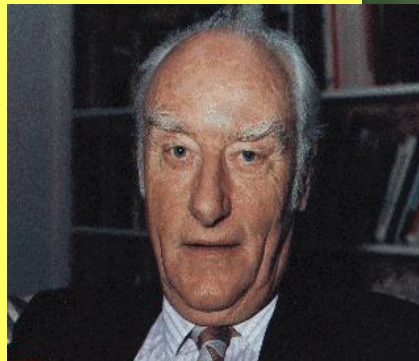


Ernst Ruska
Electron microscope




Rosalind Elsie Franklin
The discovery
of the DNA structure

James Watson
and Francis Crick
Discovered DNA



Ian Wilmut
The Dorset ewe Dolly

The image features three pink roses of varying shades and stages of bloom, set against a light pink, textured background. The roses are positioned on the left side of the frame, with green leaves interspersed among them. The text is located on the right side of the image.

Be the first Biotechnology graduate in the region and take advantages of joining one of the thousands available job opportunities world wide

Thank You