

# **UNIVERSITE CHEICH ANTA DIOP**

## **Center of Excellence COMSATS**



**Prof Tahir DIOP**

**17th Meeting of Comsats Coordinating Council**  
**19 – 20 May 2014, Tehran, IRAN**

# PLAN

## **I. PRESENTATION OF UCAD**

1. History
2. Educational and research structures
3. Staff

## **II. PRESENTATION OF CENTERS OF EXCELLENCE**

1. Governance
2. Components

# History

1918 : Establishment of a School in  
Medicine

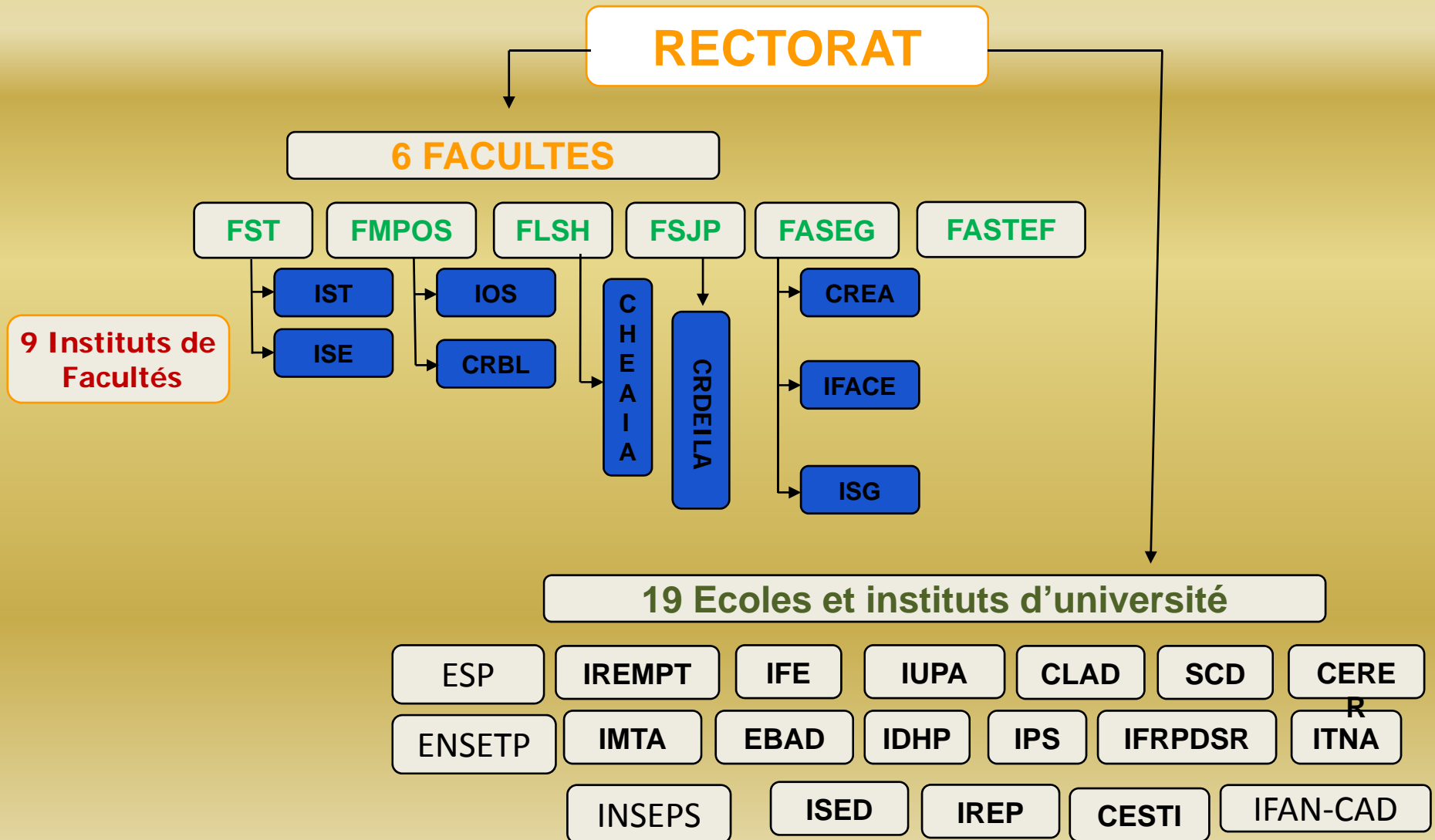
1949 : Institute of High Studies of Dakar

1957 : Establishment University of  
Dakar

1986 : University of Cheikh Anta Diop



# Educational and research structures



## STAFF UCAD

Category	Number
Academic Professor	1329
Administrative Technicians staff	1273
Students	95000

## **II. PRESENTATION CENTRE D'EXCELLENCE**

### **1. Gouvernance**

**Approved by COMSATS in July 2012**

Administered by :

- **Director : Prof. Saliou NDIAYE**
- **Focal point : Prof. Tahir DIOP**
- **Steering Committee : 10 Members**

## **II. UNITS of the COMSATS – UCAD Center**

➤ **Renewable Energy**

➤ **Plant and microbial biotechnologies**

➤ **Public Health (Bacteriology / Virology)**

# Renewable Energy

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graph TD; RE[Renewable Energy] --> FST[Faculty of Sciences and Technology (FST)]; RE --> ESP[Polytechnic Higher School (ESP)]; RE --> CERER[Centre for Studies and Research on Renewable Energy (CERER)]; FST --> LASER[Laboratory of Semiconductors and Solar Energy (LASES)]; FST --> LSM[Laboratory of Materials Science (LSM)]; ESP --> LEA[Laboratory of Applied Energétics (LEA)]; ESP --> LER[Laboratory of Renewable Energy (LER)]; ESP --> CIFRES[International Centre for Training and Research on Solar Energy (CIFRES)]; ESP --> Siméon[Laboratory of Physics of Atmosphere and Ocean (Siméon Fongang)]; CERER --> LPE[Laboratory Photovoltaic Energy]; CERER --> LTT[Laboratory of Thermal Energy and Thermodynamics]; CERER --> LBD[Laboratory of Biomass and Domestic Fuels]; CERER --> LWE[Laboratory of Wind Energy];
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**Faculty of Sciences and Technology (FST)**

**Laboratory of Semiconductors and Solar Energy (LASES)**

**Laboratory of Materials Science (LSM)**

**Polytechnic Higher School (ESP)**

**Laboratory of Applied Energétics (LEA)**

**Laboratory of Renewable Energy (LER)**

**International Centre for Training and Research on Solar Energy (CIFRES)**

**Laboratory of Physics of Atmosphere and Ocean (Siméon Fongang)**

**Centre for Studies and Research on Renewable Energy (CERER)**

**Laboratory Photovoltaic Energy**

**Laboratory of Thermal Energy and Thermodynamics**

**Laboratory of Biomass and Domestic Fuels:**

**Laboratory of Wind Energy**



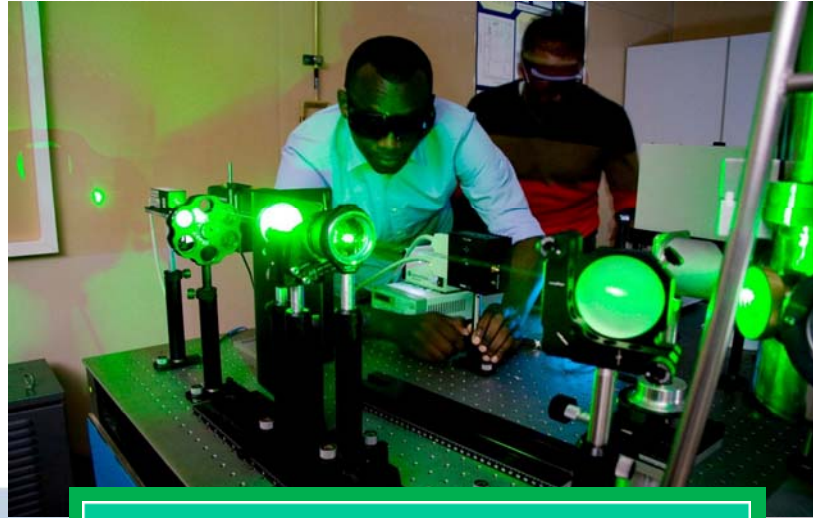
# Research activities

- **Conversion and Energy Storage , Thermal , Wind , Solar**
- **Thermal comfort in housing and energy efficiency**
- **Modeling Systems Renewables and design of static converters**
  
- **Monitoring and control of power systems**
- **Electrochemical Deposit n- Type CdTe**
- **Study of cells produced by electrochemical doping**
- **Electrical properties of SnTe**
  
- **Tabled CdTeSe and electrochemical characterization**
- **Models for the spectral response of photo- electrochemical cells**
- **Properties of Condensed Matter**
- **Behavior of functional materials**

# Unit : Renewable Energy Statistics

Category	Number
Academic Professor	53
PhD	77
Master degree	92
Publications 2013 - 2014	163

# Unit : Renewable Energy : /Equipements



*Photoluminescence*



Module cylindro-parabolique



Eolienne

# Unit 2: Plant and Microbial Biotechnologies

- **Laboratory of Plant biotechnologies**
- **Joint Laboratory of Microbiology IRD / ISRA / UCAD (LCM)**
- **Laboratory of Fungal Biotechnologies**

- **Tissue cultures**
- **Phytopatology**
- **Molecular biology**
- **Biochemistry**
- **Experimental Station**
- **Microbiology**

# Research Activities

- **Development of methods for micropropagation and in vitro cloning**
- **Ecophysiology of mycorrhizal fungi and nitrogen fixing bacteria**
- **Production and valorization of biofertilizers**
- **Biological control**
- **Integration of biotechnology in agriculture and forestry routes**
- **Determination of the genetic variability of sources for a rational management of plant genetic resources**
- **Introduction of genes of interest (resistance to pathogens) in tropical species**
- **Study of the reproductive system and mode of transmission of genes in natural populations**
- **Development of axes of research for food security and sustainability**

# Unit Biotechnology Vegetal and Microbiology /Statistics

Category	Number
Academic Professor	31
PhD	21
Master degree	16
Technician	14
Publications	80

# Equipments



## **Unit: Public Health**

**Bacteriology-Virology laboratory hôpital  
Aristide  
Le Dantec -Dakar - Sénégal**

Headed by

**Professor Souleymane Mboup**



# Organization

- **Technical Units (6)**
  - The Bacteriology unit
  - The Molecular Biology unit
  - The immunology unit
  - The Virology unit
  - Clinical trials unit
  - Quality management and Accreditation
- **Administration, finances and social**

# Bacteriology Unit

## **Pioneer Unit of the Laboratory of Bacteriology Virology**

- **Diagnosis of bacterial infections by processing the bacteriological samples of hospitalized and external patients.**
- **Sub-unit of myco bacteriology that performs tuberculosis diagnosis**
- **BL3 facility**

# Virology Unit

- **Reference laboratory for HIV infection**
- **Organization of the quality control of HIV infection serological diagnosis throughout the country**

# Molecular Biology Unit

- **Conducts research based on**
  - **studies of cohorts**
  - **clinical trials**
  - **development of alternative diagnosis tools and is in charge of the virological monitoring of HIV infected patients**
  - **The unit is accredited by WHO for the surveillance of the HIV 1 drug resistances in 2009**
- **Training centre for students, trainees and other young researchers of the sub-region**

# Immunology Unit

**Junior technical unit created in 2002.**

**□ Plays a transversal role :**

- Biological monitoring of the PVVIH through the CD4 counting,
- Basic immunological research
- Platform of evaluation for many commercial for TCD4+ count
- of training and mentorship through various research activities

# Clinical Trial Unit

## *Research Activities*

- - HIV
  - ( HAART strategies evaluation)
- TB
  - the MVA85A vaccine in HIV+ subjects in collaboration with the universities of Oxford and Cape Town
- Hepatitis :
  - PROLIFICA : Prevention Of Liver Fibrosis and Cancer in Africa
  - WATCH = West African Treatment Cohort for Hepatitis
- The primary objective of this study is to demonstrate if the treatment of the hepatitis B virus by nucleotide analogue reduces the risk of liver cancer in the population of West Africa.

# LBV-Staff

<b>Category</b>	<b>Number</b>
<b>Academic Professor</b>	<b>4</b>
<b>PhD</b>	<b>10</b>
<b>Physician or Pharmacist</b>	<b>17</b>
<b>PhD fellow</b>	<b>14</b>
<b>Master degree</b>	<b>6</b>
<b>Biological Engineers</b>	<b>5</b>
<b>Publications</b>	<b>50</b>
<b>Technicians (bachelor level) (Academic diploma)</b>	<b>12</b>
<b>Technician</b>	<b>3</b>
<b>Lab assistant</b>	<b>5</b>
<b>support staff</b>	<b>19</b>
<b>Administrative staff</b>	<b>16</b>
<b>Maintenance Staff</b>	<b>4</b>

# Networking of UCAD-COMSATS Center (1)

- Member of the National Committee to Fight nosocomial infections (CONALIN in French)
- African AIDS Research Network( Western and central zone) -AARN
- African Society for Laboratory Medicine (ASLM)
  - WHO-AFRO, CDC, PEPFAR, UNAIDS, World Bank the Clinton Health Access Initiative, American Society for Clinical Pathology (ASCP), the African Union Commission , Biomerieux



## Networking of UCAD-COMSATS Center (2)

- National laboratory of Biosecurity
- African Laboratory of Renewable Energy
- National project on sustainable agriculture financed by IAEA
- International Master on Tropical Biotechnologies.

# Areas of Needs for Cooperation and Collaboration

## ❖ To Organize Internatinal training on :

- Renewalable energy
- Plant and microbial biotechnologies.

## ❖ To Integrate Comsats Thematic Research Groups on :

- Agriculture and Biotechnology
- Renewelable energy

## ❖ To be Head Leader on Thematic Research on Public Health

## ❖ To host Comsats Training on maintenance of equipments

## ❖ To benefit mobility through Comsats networking

- Researchers
- Ph D students



**THANK YOU FOR  
ATTENTION**