Health Sciences Research Centre
Research Department

The Research Department-HSRC

The Research Department works to provide a supportive and stimulating environment for various scientific and health research by equipping specialized laboratories and establishing high-quality ethical and scientific bases and standards that are consistent with the laws and regulations adopted in Saudi Arabia.

Research Department Sections

Core labs

- Cell Biology unit
- Pharmaceutics and Pharmacokinetics Research Unit
- Electrochemistry Research Unit
- Environmental Research and Biological Materials Unit
- Hematology Research Unit
- Microbiology and Immunology Research Unit

Genome

- Gentics unit
- Biotechnology Research Unit

Biobank

- Histology Unit
- Electron mircoscpe Unit

Cell Biology Unit

The Cell Biology lab conducts research on the processing, transport, and metabolism of proteins and small molecules in relation to malignant transformation, metastasis, and multidrug resistance in cancer. They use various techniques and equipment to investigate signalling pathways and molecular interactions involved in cancer progression, with the goal of identifying potential targets for new cancer therapies and improving understanding of cancer biology.

Research Department

Core Labs

Cell Biology

Our Team

HSRC Staff:

- Dr. Hanan Henidi, Research Scientist.
- Dr. Sama Abdullah, Research Scientist.
- Manal AlKahtani, Research Technologist
- Kholoud Baeshen, Research Technologist

Our Services

1. **Cytotoxicity Assay**
2. **Cell Migration Assay**
3. **UV/Visible Spectrophotometer**
4. **Thermogravimetric analysis (TGA/DSC)**
5. **HPLC**
6. **GCMS MS**

Requesting services:

Main instruments:

Cell culture room

Western Blotting

ChemiDoc Imaging

UV-Spectrophotometer

Thermogravimetric analysis (TGA/DSC)

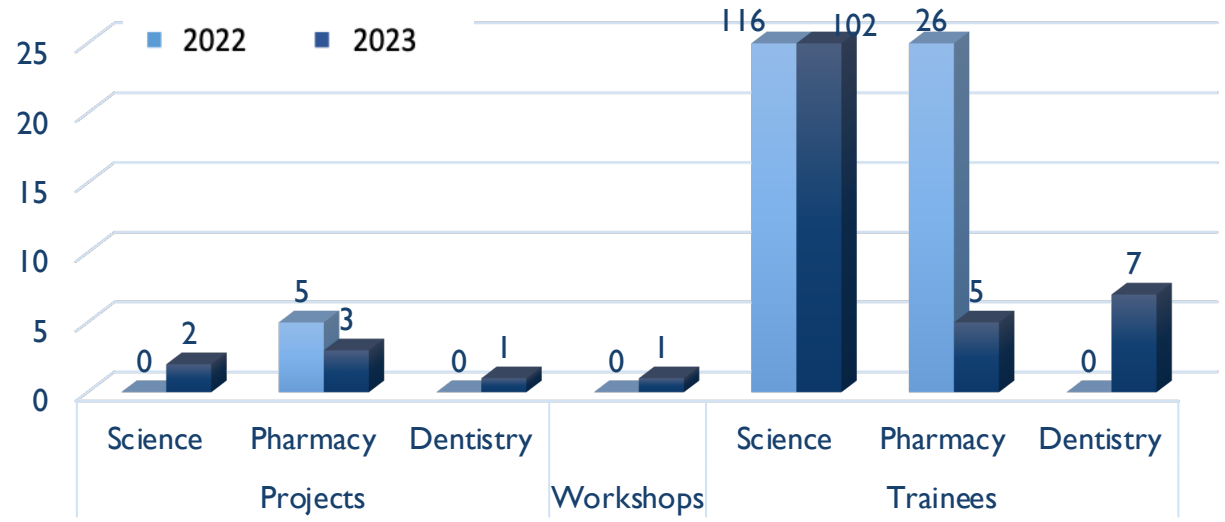
GCMS-MS

HPLC

Access and Equipment Use:

Please contact Manal Alkahtani via email mamalkahtani@pnu.edu.sa

Statistics 2022- 2023 (Q1)



Ongoing Projects

1. Design and Synthesis of New Thiophene/ Thieno[2,3-d]pyrimidines along with Their Cytotoxic Biological Evaluation as Tyrosine Kinase Inhibitors
2. Preparation and characterization of curcumin nanoparticles based on chitosan-octanoate for potential delivery to prostate cancer cells3
3. Ciprofloxacin/norfloxacin Complexation: Characterization and Evaluation of the Complex as Sustained-Release Matrix in animal PK model
4. Genistein complexation enhances genistein solubility, release and potentiates anticancer activity
5. Development of Novel Cordycepin Long–Acting Nanogel Using Co-Polymeric Coating for wound healing purposes
6. Empagliflozin co-polymeric nanocomposites for the treatment of cancer
7. Potential dissolution enhancement and Modulatory Effects of an optimized nanocomposite film on the Efficacy and Toxicity of Doxorubicin
8. Vortioxetine orally available novel Nanosystems (Paper and Patent)
9. Natural product-targeted drug delivery systems for cancer patients (Paper and Patent)
10. The use of inhibitor small molecules to modulate the effects of chemotherapeutic agents.
11. The use of natural products to modulate the effects of chemotherapeutic agents.

Pharmaceutics research unit

The Pharmaceutics Research Unit conducts research in drug formulation and development, with a focus on improving drug delivery and efficacy. The unit is equipped with advanced analytical tools, including dissolution and disintegration equipment, as well as an organic synthesizer for novel drug compound synthesis and testing. Through their research, the unit aims to develop new drug formulations and delivery systems using nanotechnology and advanced materials.

Research Department

Core Labs

Pharmaceutics research unit

Our Team

HSRC Staff:

Dr. Hanan Henidi, Research Scientist.

Dr. Sama Abdullah, Research Scientist.

Manal AlKahtani Research Technologist

Kholoud Baeshen, Research Technologist

PNU Coordinators:

Dr. Ahlam Sultan

Dr. Ishrat Rahman

Prof. Azza El-Sheikh

Dr. Fatemah Ayesh. Alherz

Dr. Asmatanzeem Bepari

Our Services

1. Nano Spray Dryer
2. Organic Synthesis
3. Dissolution Testing
4. Disintegration Testing

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Requesting services:

Main instruments:

Cell culture room

Nano Spray Dryer

Organic Synthesizer

Dissolution

Disintegration

Access and Equipment Use:

Please contact Ms. Kholod Baeshen via email kbbaeshen@pnu.edu.sa

Ongoing Projects

1- Eugenol potentiates the effect of Doxorubicin and Cyclophosphamide anti- cancer activity against different type of breast cancer.

2- Development and evaluation of spray dried micro-capsules of celecoxib poorly soluble in water to improve its solubility and oral absorption

Applied chemistry unit

The laboratory offers research services that cover various fields of chemistry, including organic chemistry, inorganic chemistry, analytical chemistry, and corrosion. Additionally, the laboratory specializes in Electric charge transfer reactions and the study of the production of new electrochemical materials and techniques.

the laboratory is equipped with a Metallographic/Polishing Machine and an Ultrasonic Cleaner to assist with various research tasks.

Research Department

Core Labs

Applied chemistry unit

Our Team

HSRC Staff:

Aziza Khulaif Alfuhaidi, Academic Researcher

PNU Coordinators:

Dr. Fatemah Alzahrani

Our Services

1-sample analysis.

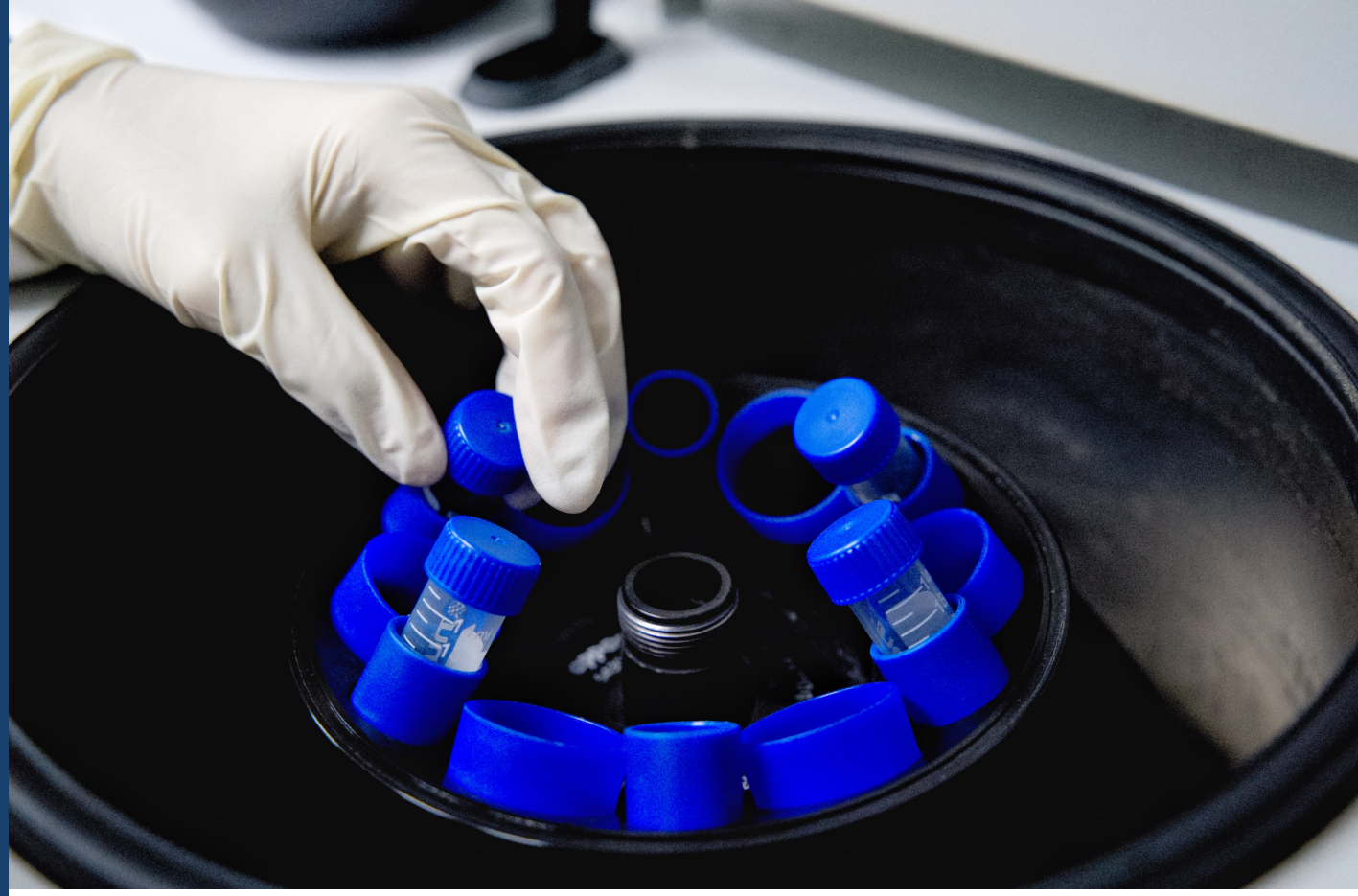
2-Sample preparation in the field of basic and industrial chemistry.

3-manufacture of new electrochemical materials and methods.

Our team of experts are here to help you develop successful laboratory expertise in the field of applied chemistry and provide the necessary research services.

Main instruments:

1. Crystal grinding
2. Centrifuges
3. Double Beam Spectrophotometer
4. Furnace
5. Polisher



Access and Equipment Use:

Please contact Ms. Aziza Khulaif Alfuhaidi via email akalfuhaydi@pnu.edu.sa

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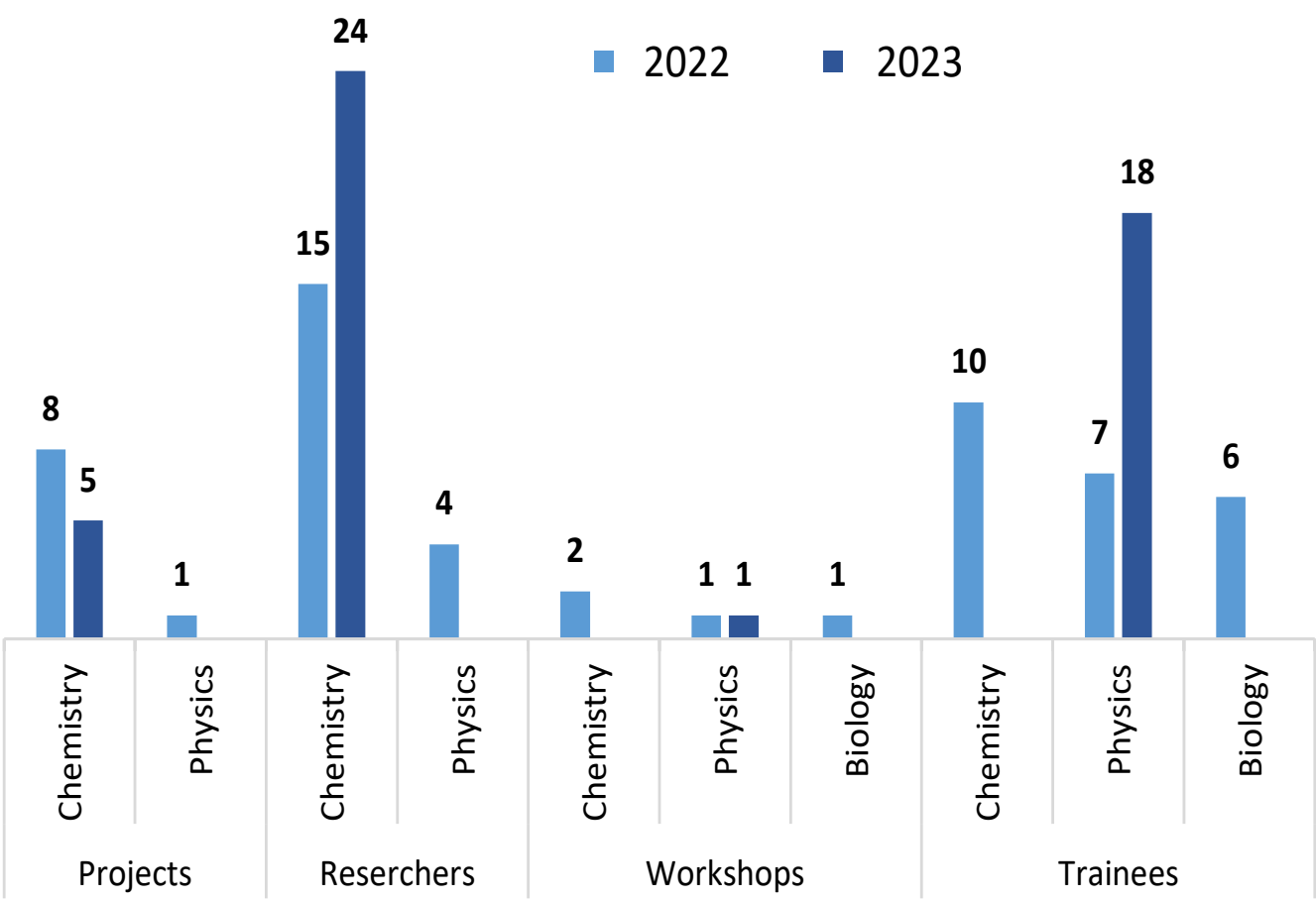
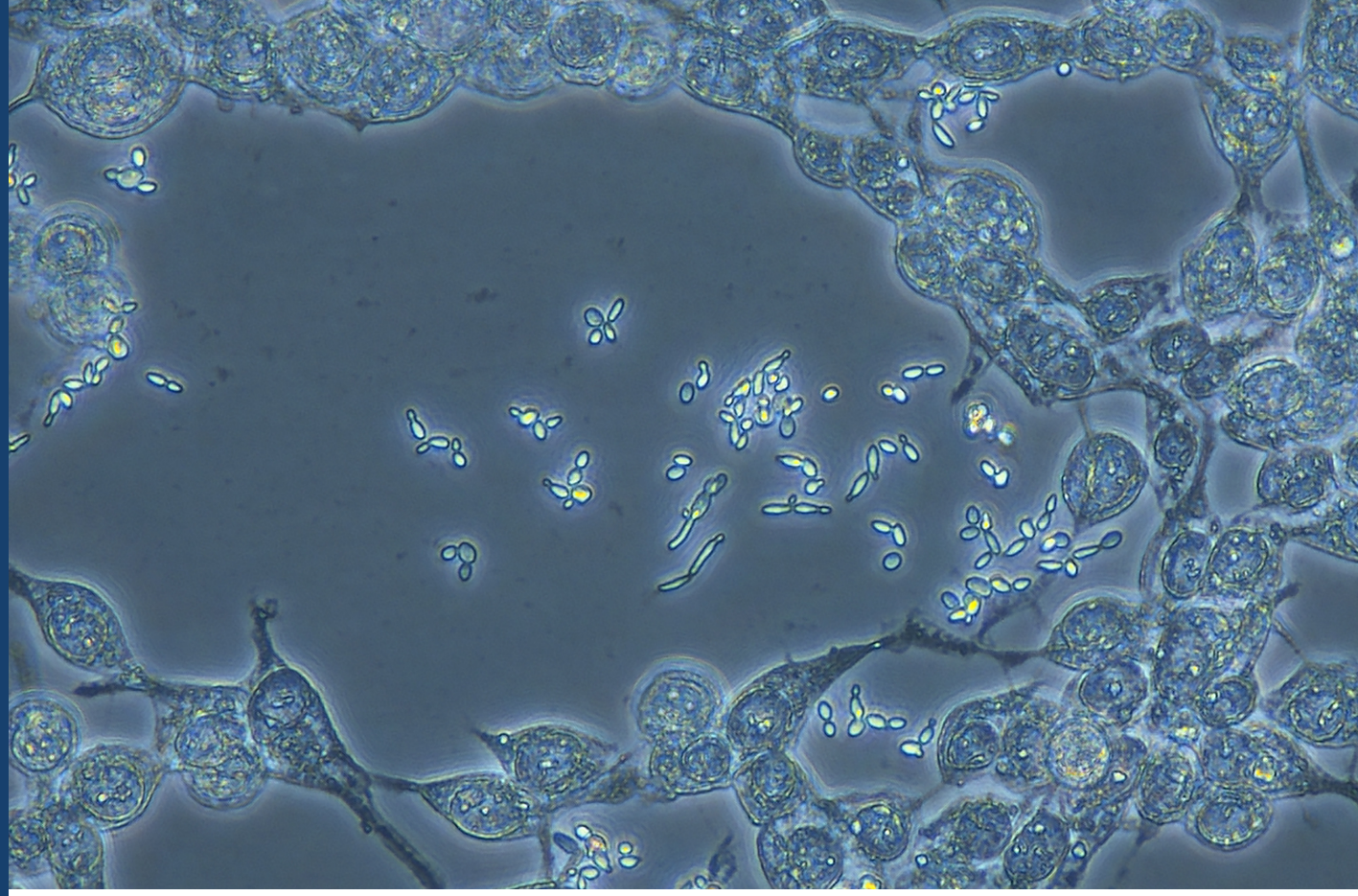


Ongoing Projects

1. Green synthesis of silver and zinc oxide nano particles.
2. Synthesis of natural/polystyrene nanocomposites as a coating for iron and as an inhibitor of corrosion.

Microbiology and immunology unit

The laboratory is divided into four main sections: Molecular Microbiology, Sterilization and Media Preparation, Mycology, and culture area. Each section has its own equipment and offers research services to scientists. The laboratory supports collaborative research across all departments and is committed to providing researchers with the best possible resources and services



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Research Department

Core Labs

Microbiology and immunology unit

Our Team:

HSRC Staff:

Dhuha Fahad ALsuwaid

PNU Coordinators:

Dr.Suaad S. Alwakeel

Dr. Munari D. Alkahtani

Dr. Salwa Saifeddin

Our Services

1. **The Antimicrobial Effectiveness Test (AET)**
2. **Bacterial Identification Test**
3. **Antibiotic Susceptibility Test**
4. **Minimum Inhibitory Concentration (MIC)**
5. **Minimum Bactericidal Concentration (MBC)**
6. **Training and Consulting**

Requesting services:

Main instruments:

1. VITEK 2 COMPACT
2. Autoclave device
3. light microscope with computer
4. inverted microscope.

Access and Equipment Use:

Please contact Ms. Douha via email
DFALsuwaid@pnu.edu.sa

Statistics 2022- 2023 (Q1)

Ongoing Projects

1. Effect of Oxygen Fluid (Blue M) as Root Canal Irrigant Against Enterococcus Faecalis. PI; Dr. Reem Barakat, College of Dentistry PNU.

2. Integration Of Bimetallic/Biochar Nanocomposite and Tomato Fungal Pathogen Mitigation. PI; Dr. Afrah Mohammed, college of Science PNU

3. Strategy for mitigating antibiotics by biochar nanocompsite bio-agent in heavy metal and antibiotics co-contaminated soil. PI; Dr. Afrah Mohammed, college of Science PNU

4. Antibacterial activities of Green synthesis of silver and zinc oxide nanoparticles, Maymounah Alharthi, college of Science PNU

Hematology Unit

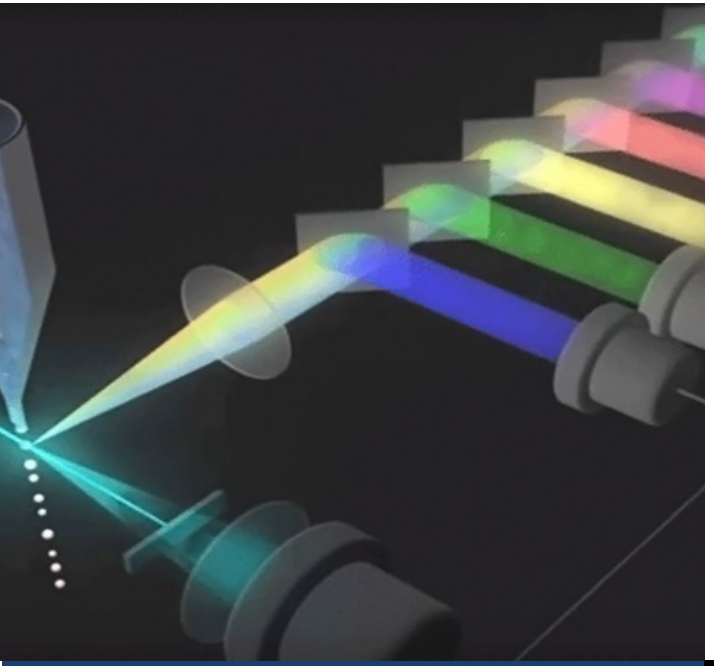
The laboratory contains a set of analytical devices for studying and diagnosing blood-related diseases. The laboratory also contains devices for cellular analysis and molecular analysis of proteins inside and outside the cell.

Contact Us

Research Department

Core Labs

Hematology Research Unit



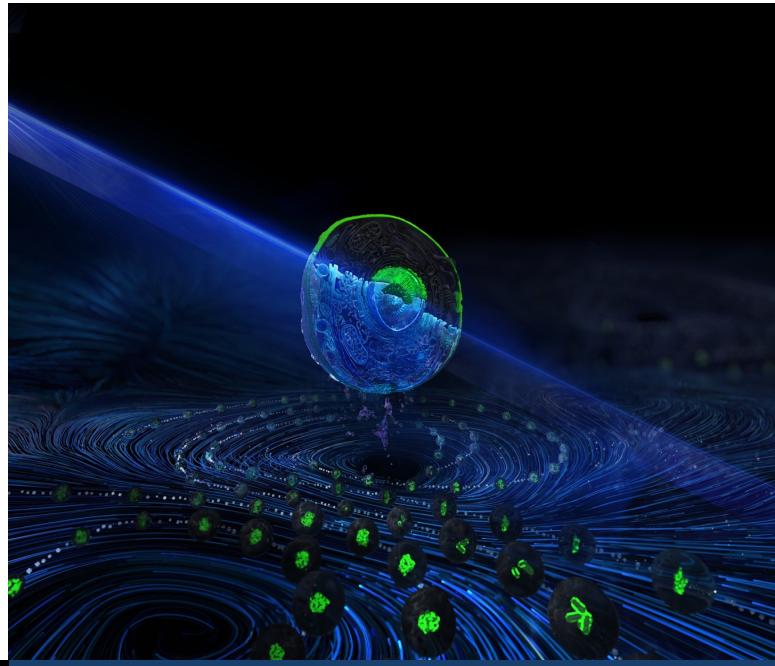
Our Team:

Zaha Almakhlafi

PNU Coordinators:

Dr.Amal Dawood

Dr.Dema Bassar



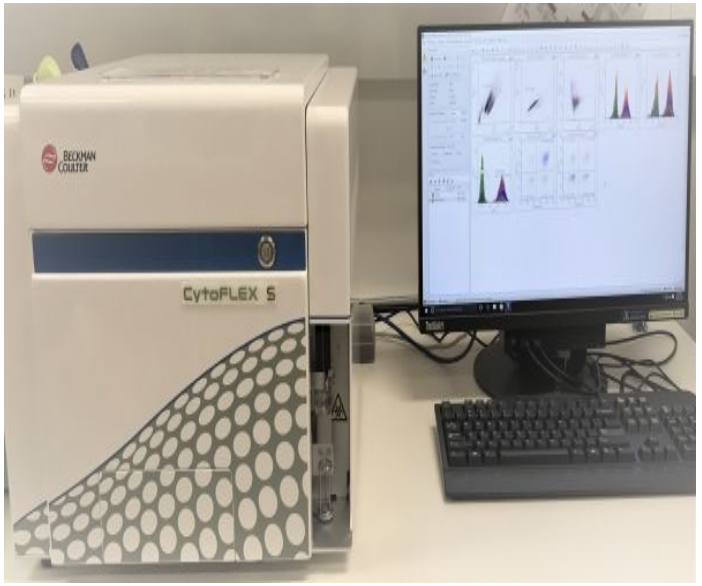
Our Services

- Specimen processing
- Specimen acquisition
- Data analysis
- Training and Consulting

- Requesting services:

Main instruments:

1. Flow cytometry
2. Coagulation analyzer.
3. CBC Analyzer Machine



Access and Equipment Use:

Please contact :

zaha almakhlfi via email:

zaalmukhalfi@pnu.edu.sa

Statistics 2022- 2023 (Q1)

1. Workshop: Immune Monitoring by Flow Cytometry.
2. Run and analyze more than 100 Samples
3. Train 6 students from Sciences College to run and analyze their samples.

Ongoing Project:

Role of Glucose regulated protein 78 in platelets.

Environment and biomaterial unit

The laboratory specializes in studying environmental materials and pollutants using various analytical techniques. The researchers aim to gain a better understanding of the chemical and physical properties of these materials and pollutants, as well as their potential impacts on the environment and human health

Research Department

Core Labs

Environmental and biomaterial unit

Our Team

HSRC Staff:

Ms.Aziza Alfuhidi

PNU Coordinators:

Dr. Mashael Dag. Al-Qahtani

Dr. May Nas. BinJumah

Our Services

- Sample preparation
- Sample Analysis
- Scanning Probe Microscope (SPM)
- Radon measurement (RAD-7)

Our team of experts are here to help you develop successful laboratory expertise in the field.

Main instruments:

1. Scanning Probe Microscope (SPM)

2. Radon measurement (RAD-7)

Access and Equipment Use:

Please contact Ms. Aziza Khulaif Alfuhaidi via email akalfuhaydi@pnu.edu.sa

Statistics 2022- 2023 (Q1)

Ongoing Projects

1. Detail study about the impact of the mining activities on the water quality and the ecosystems; assessment and treatment

Genetics Unit

Genomics is one of the most important branches of life science.

Genomics unit focuses on studying the organism at the DNA level, which is the basis of regulation and control in any vibrant cell. The unit seeks to provide the Kingdom with useful studies in the field of molecular biology,

genetic diseases and other applications of genetic engineering for the development of healthcare methods and the

adoption of modern methods based on genetic information in methods of agriculture

and environmental development.

Research Department

Genetics Section

Our Services

- 1-Nucleic Acid Extraction
- 2-PCR
- 3- RT-PCR
- 4- Sanger Sequencing
- 5- Targeted sequencing
- 6- WES
- 7- WGS

Our Team

HSRC Staff:

Ms. Sheka Aloyouni, Associate Researcher

Dr. Adel BinDuraihem, *Research Scientist*

Ms. Khawalah Aldilaijan, *Research Technologists*:

Ms. Sara Albabtain, *Research Technologists*:

PNU Coordinators:

Dr. Mariam AlKhateeb,

Dr. Dalal Alshaya,

Dr. Sameera Abuaish,

Dr. Amal Alotaibi

Dr. Mary Cordero,

Dr. Lina Elsayed

Genes are like the story, and DNA is the language that the story is written in

Sam Kean

Main instruments:

1- Automated Nucleic Acid Extraction

2 - RT-PCR

3 - Thermal Cycler

4 - Sanger Sequencer

5 - MicroArray

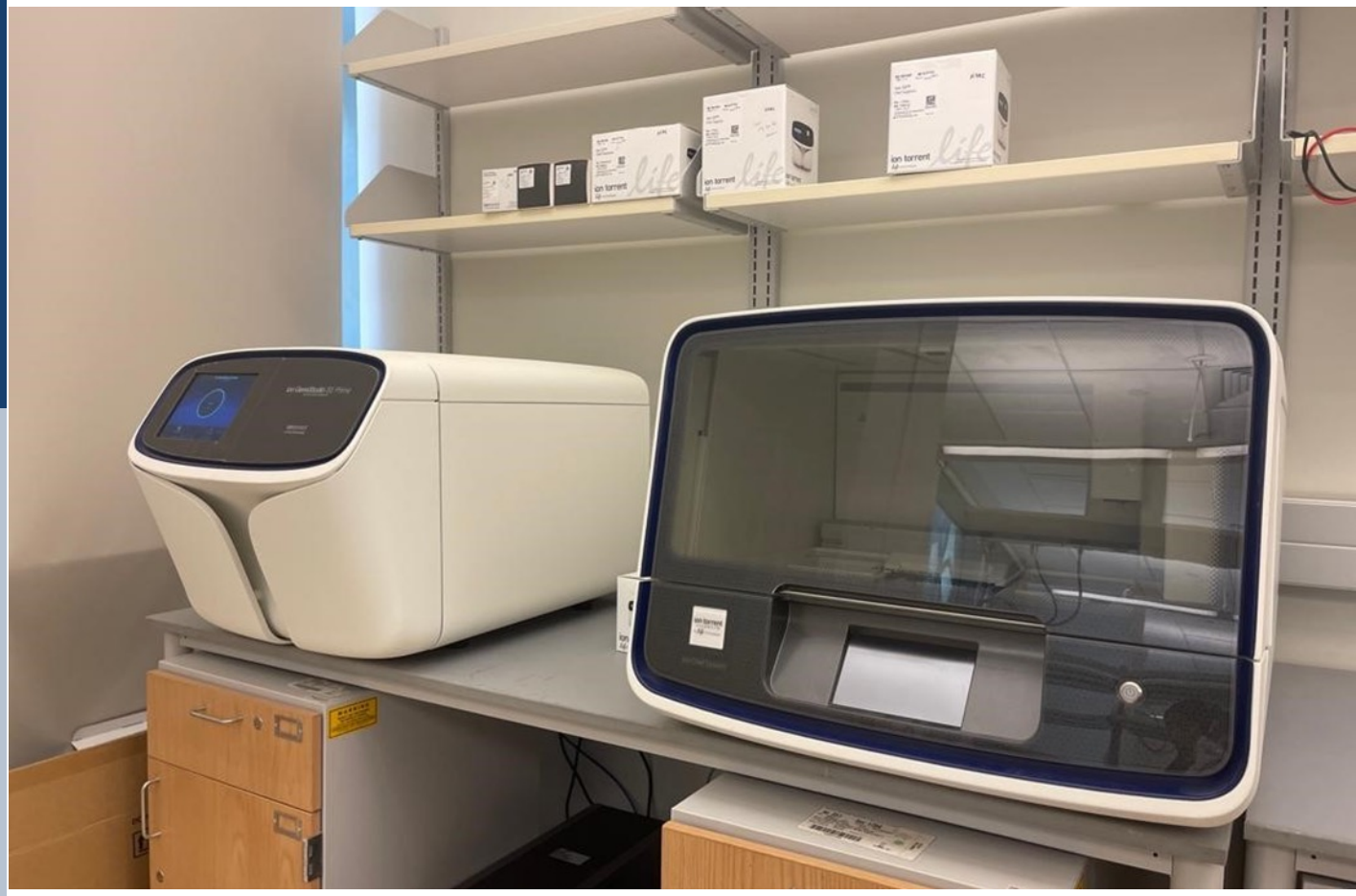
6- NGS

7 - Gel Electrophoresis

8 - Nano Drop

9 - Denovix

10 - PyroMark



Access and Equipment Use:

Please contact Ms. Kawlah Aldilaijan or Ms. Sara Albabtain via email:

KEAldilaijan@pnu.edu.sa
SAAAlbabtain@pnu.edu.sa

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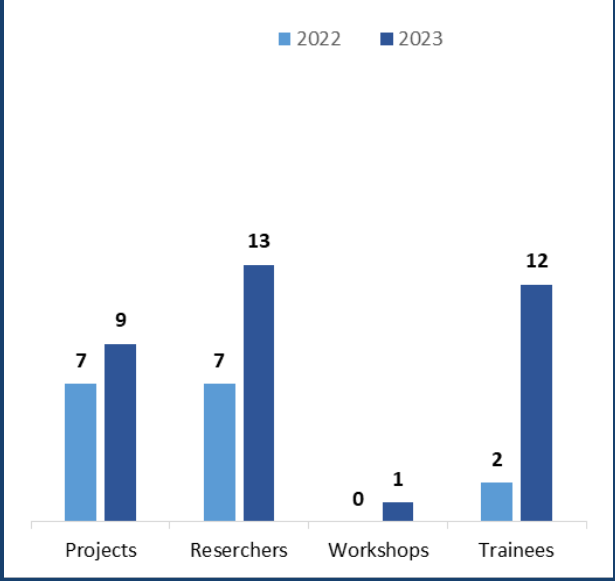


Ongoing Projects

1- Mutational profiling of Myelodysplastic syndromes and Myelodysplastic syndrome/myeloproliferative neoplasm in Saudi patients by Next Generation Sequencing (NGS) approach

2- Characterizing Genetic abnormalities in Autistic Spectrum Disorder (ASD) Patients in Saudi Arabia

3- Genetics of Alzheimer's Disease and its Modeling in Saudi Population in Saudi Patients

4- Dissecting the clinical spectrum & the molecular basis of phenotypically & genetically overlapping neurogenetic disorders in Saudi Arabia

5- Molecular analysis of serologically D-negative and D-positive phenotypes in Saudi blood donors

6- Deciphering Molecular Portraits of Breast Cancer in Very Young Patients from Saudi Arabia: An Integrative Translational research

7- Childhood Asthma and development of cognitive impairment, Anxiety and depression in middle age

8- Metagenomics approach to riposte the SARS-CoV-2 infection ambiguity: Toward identifying the culprit, Fighting the disease's susceptibility and improving the outcome"

9- Quantitative detection of Anaplama and Theileria species in camels and bovine blood samples using real-time PCR Technique

Histology Unit

Our histology lab plays an important role as a valuable resource in providing an excellent quality product for publications and grants for the investigator. Here we collect, process and store tissue samples.

Research Department

Tissue Biobank

Histology

Our Services

1- Tissue Grossing & processing.

3- Tissue Embedding & sectioning.

5- Routine and Special staining.

6- -80 and liquid nitrogen Storing.

Our Team

HSRC Staff:

- Dr. Alaa Al Masud, Research Scientist.
- Ms.Sarah Faloudah, Research Technologist.
- Mr. Meshal Al shurafah, Research Technologist..

Requesting services:

Main instruments:

Automated Tissue Processor

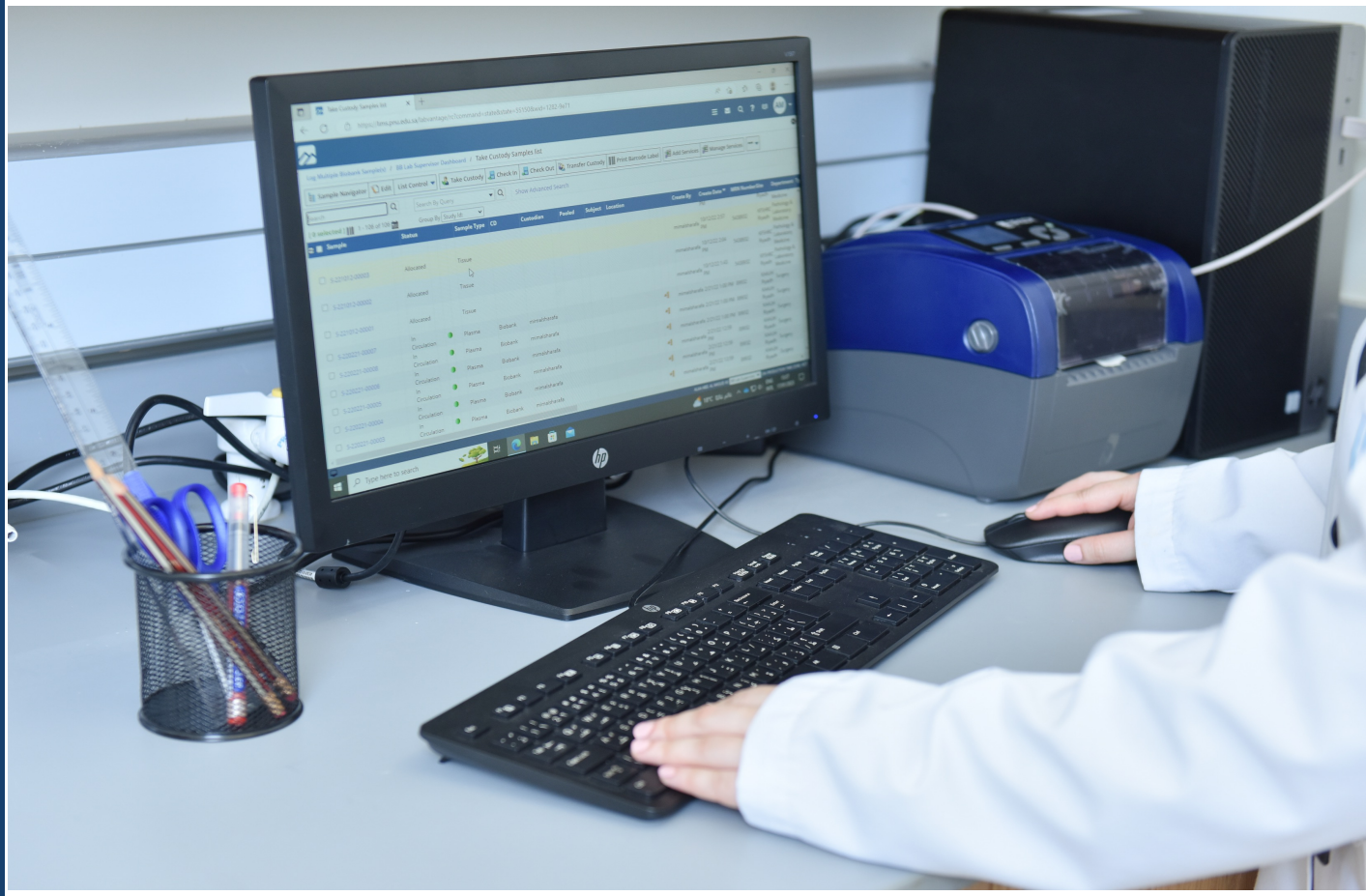
Microtome

Cryostat

Auto Stainer

-80 Freezer storage

Liquid Nitrogen Storage



Access and Equipment Use:

For Access to the Histology contact:
HSRC-EMD@pnu.edu.sa

Cytology unit

Our Cytology lab plays an important role as a valuable resource in providing an excellent quality product for publications and grants for the investigator. Here we collect, process and store body fluids and Gynaecological samples.

Research Department

Biobank

Cytology

Main instruments:

Liquid Base preparation

Cytocentrifuge

Auto Stainer

-80 Freezer storage

Liquid Nitrogen Storage

Access and Equipment Use:

For Access to the Cytology unit contact:
HSRC-EMD@pnu.edu.sa

Advance Imaging unit

The advanced imaging unit consists of cutting-edge technology for diverse types of samples. The unit enables all kind of research through services and collaborations as well as preparation of a variety of samples.

Research Department

Biobank

Advanced imaging unit

Main instruments:

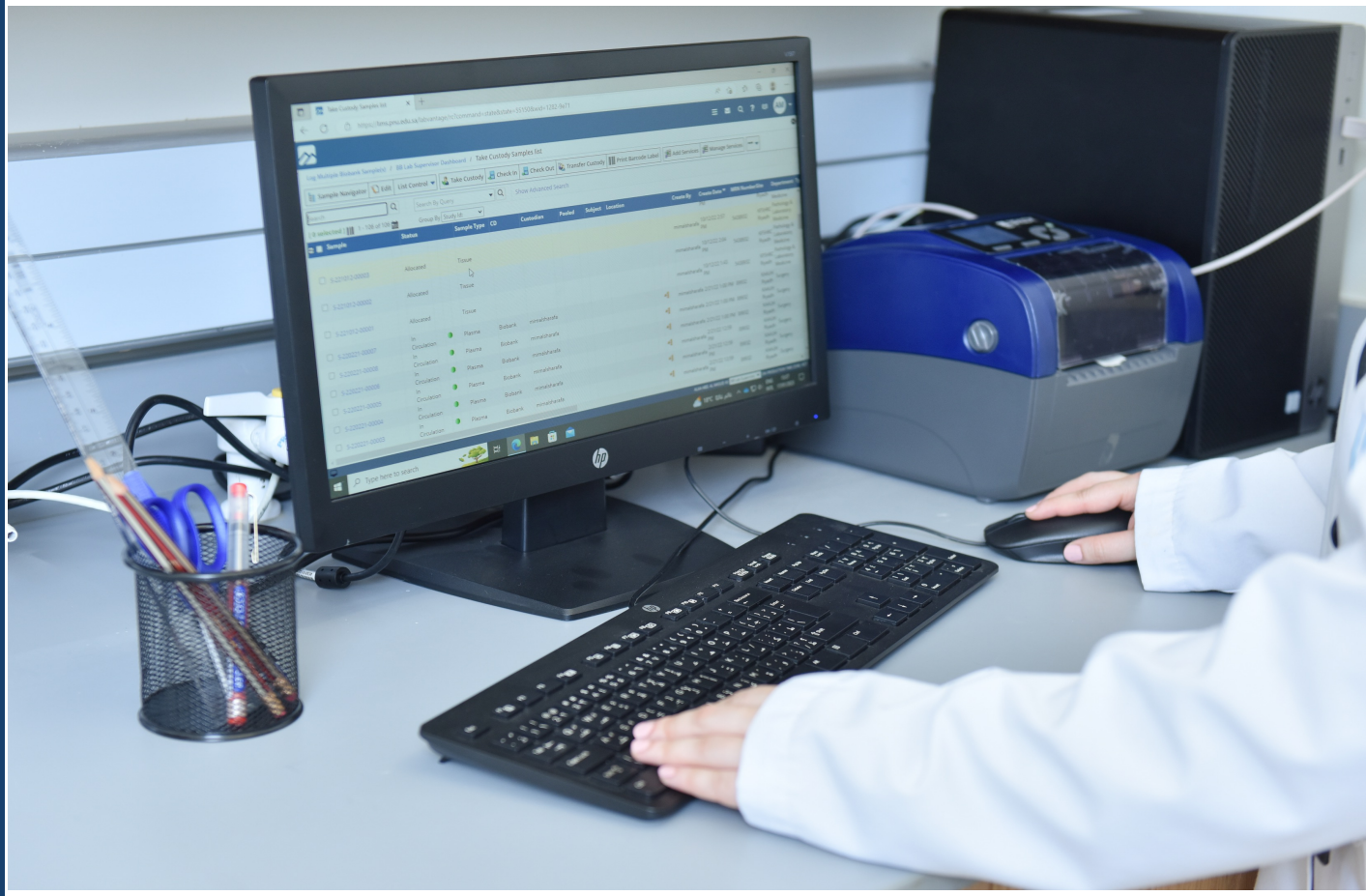
Transmission Electron Microscope

Scanning Electron Microscope

MicroCT Scan

Confocal Microscopy

Ultra-Microtome



Access and Equipment Use:

For Access to the Advanced Imaging Unit contact:
HSRC-EMD@pnu.edu.sa

Biobank statistics

Instrument	No. of Services	No. of samples
Scanning Electron microscope	26	97
Transmission Electron microscope	0	0
Micro CT scan	1	48
Confocal Microscope	0	0
Total	27	145

Biobank training

- The biobank section have conducted two workshops with a total attendance of 23
- The section provided 6 training visits to 65 students