Iceland Liechtenstein Norway grants

"Working together for a green, competitive and inclusive Europe"

The Education, Scholarships, Apprenticeships and Youth Entrepreneurship Programme (ESAYEP) Financed by the EEA Financial Mechanism 2014-2021
AURORA No. 20-COP-0085

Cooperation strategy for knowledge transfer, internationalization and curricula innovation in the field of research education at the 3rd level of study - AURORA

Research Center for Advanced Medicine – MEDFUTURE

Maria Iacobescu

UMF
UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
IULIU HAȚIEGANU
CLUJ-NAPOCA

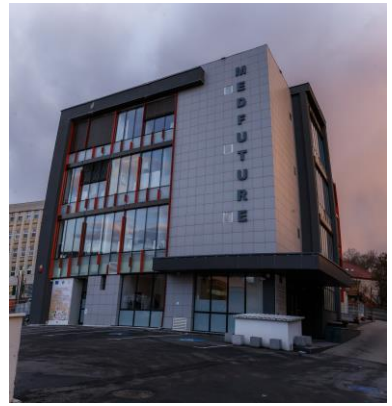
MEDFUTURE

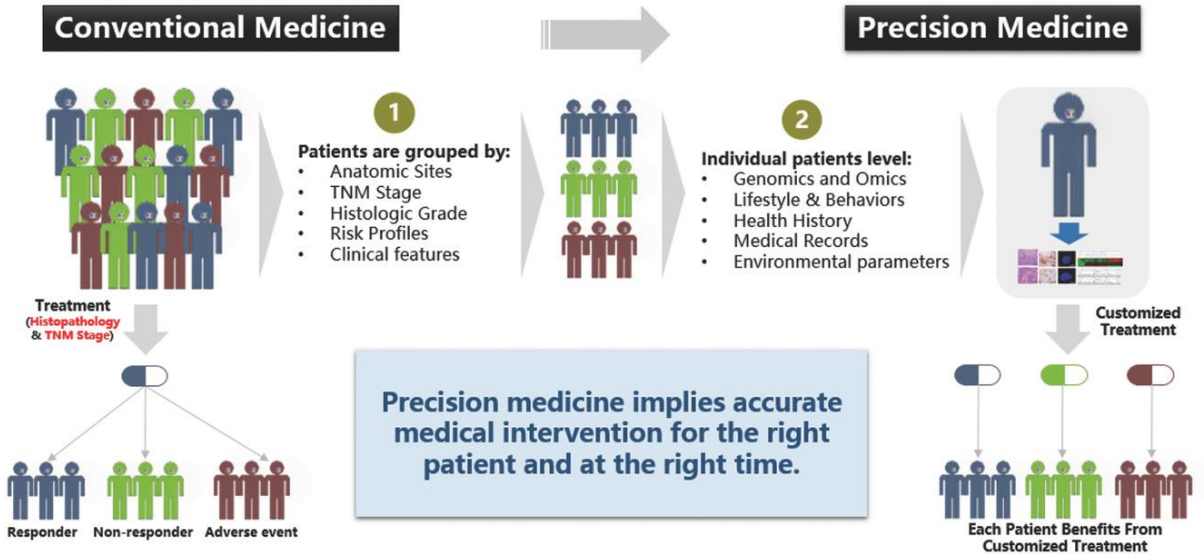
Research Center for Advanced Medicine - MEDFUTURE

"Iuliu Haţieganu" University of Medicine and Pharmacy, Cluj-Napoca

Research Center for Advanced Medicine MedFUTURE

- **2015** - MedFUTURE Research Center is the result of an EU funded project of 8 million EUR
- **Objective**:
  - to create a high-performance research center in the field of **advanced medicine** where **new concepts at molecular level** can be created, developed and implemented
- **2015** – the president Obama announced that he's launching the **Precision Medicine Initiative** — a bold new research effort to revolutionize how we improve health and treat disease
- **Mission statement:** To enable a new era of medicine through research, technology, and policies that empower patients, researchers, and providers to work together toward development of individualized care.
- Until now, most medical treatments have been designed for the "average patient." As a result of this "**one-size-fits-all**" approach, treatments can be very successful for some patients but not for others.



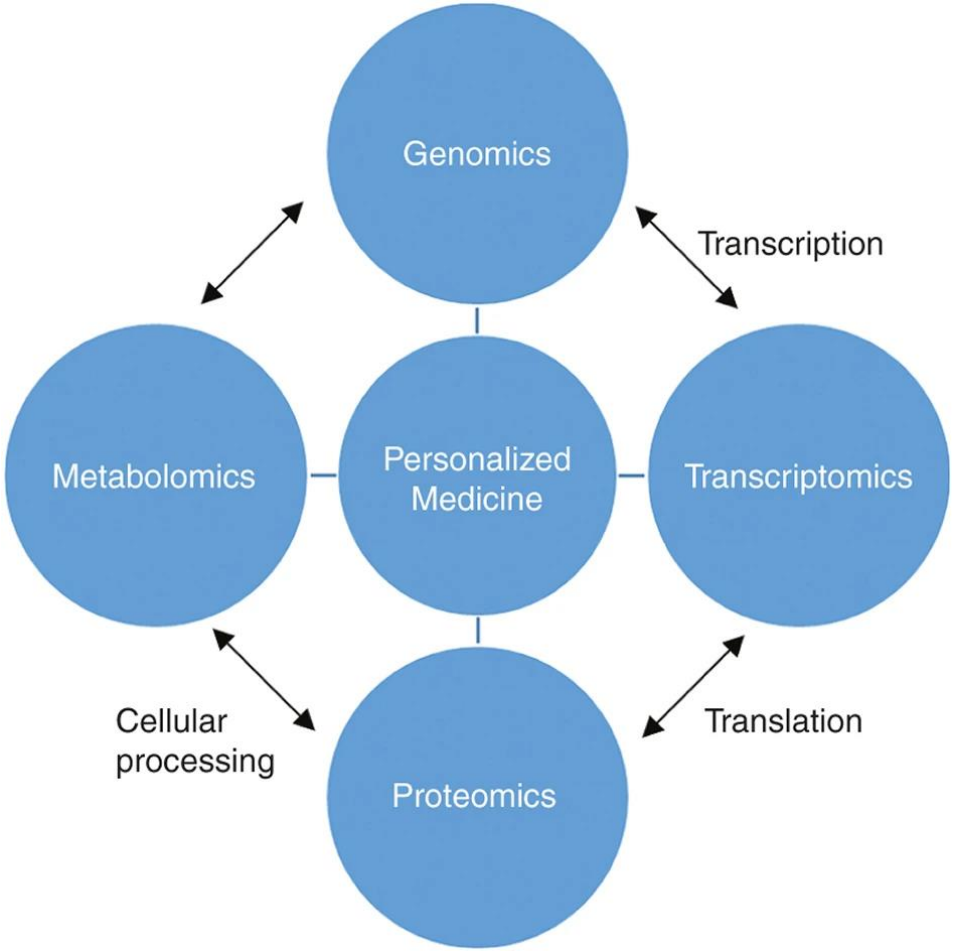


Research Center for Advanced Medicine MedFUTURE

- The recent developments in **high-throughput technologies** and **big biological datasets** is shaping the future of precision medicine

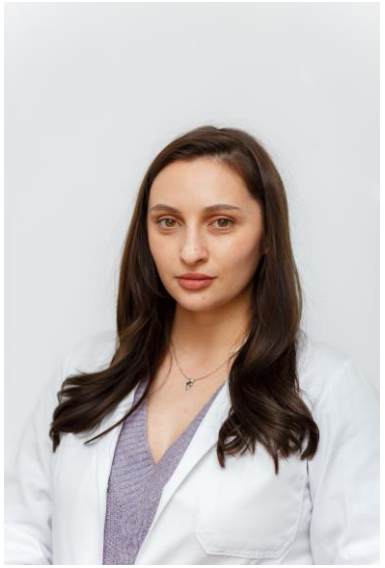
- Precision medicine proposes **to individualize the practice of medicine** based on patient genetic backgrounds, their biomarker characteristics and other omics datasets.

- The **key challenges** in precision medicine:
  - patient stratification
  - biomarker discovery
  - drug repurposing



Research Center for Advanced Medicine MedFUTURE

Prof. Cristina-Adela Iuga
Pharmacist, PhD, Habil., **Director**
Proteomics and Metabolomics



Diana Tomuleasa (Gulei)
Biochemist, PhD, Researcher
***In vivo* Studies and Animal Facility**

Assoc. Prof. Ciprian Tomuleasa
MD, PhD, Habil.
Translational Medicine

Prof. Rareș Știufiuc
Physicist, PhD, Habil.
NanoBioPhysics

NanoBioPhysics Department

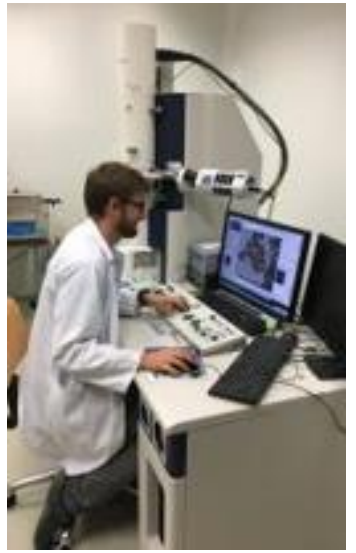
- A team of researchers with background in physics, biology and biotechnology

Prof. Rareș Știufiuc
Physicist, PhD, Habil.
Team leader

Anca Ghenț
Biotech. eng.,
PhD student

Cristian Moldovan
Biologist,
PhD student

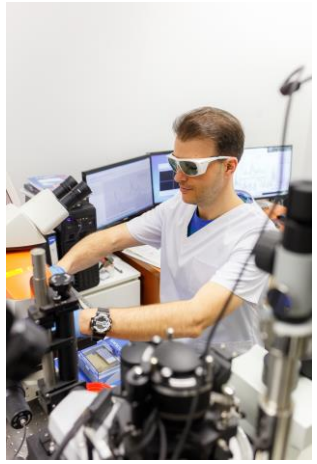
Valentin Toma
Physicist,
PhD



Alin Moldovan
Biologist,
PhD student

NanoBioPhysics Department

- offers a state-of-the-art infrastructure for basic and applied research in the rapidly growing field of **nanoscale physics and nanomedicine**
- different **microscopy platforms**:
  - transmission electron microscopy (TEM)
  - atomic force microscopy (AFM)
  - hyperspectral microscopy
  - confocal microscopy



- **physico-chemical characterization of nanomaterials**: vibrating magnetometer platform, photon correlation (PCS) spectrometer, Raman spectrometer
- can provide a **complete in-depth characterization of different types of nanomaterials**

NanoBioPhysics Department

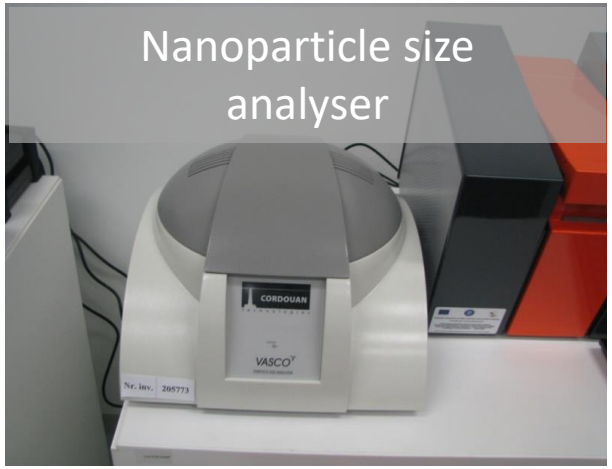
Multiphoton laser scanning microscope

Transmission electron microscope

RAMAN AFM microscope

Hyperspectral microscope

Nanoparticle size analyser



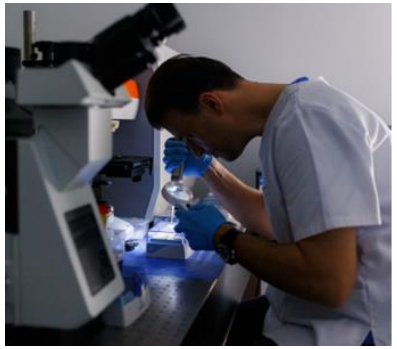
Nanoparticle Zeta potential analyser

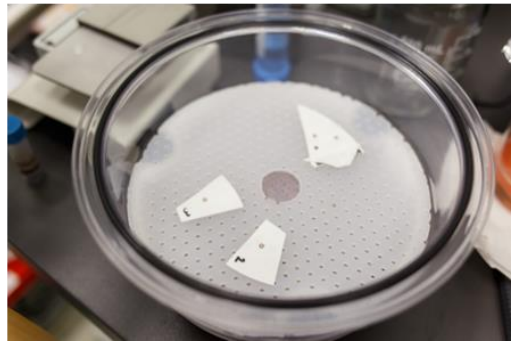
Confocal microscope

Reagents room

NanoBioPhysics Department

- **Area of research interest :**
  - synthesis and physico-chemical characterization of different types of **multifunctional nanostructures**:
    - plasmonic
    - magnetic and magnetoplasmonic nanoparticles
    - hybrid nanoliposomes
    - carbon and graphene quantum dots

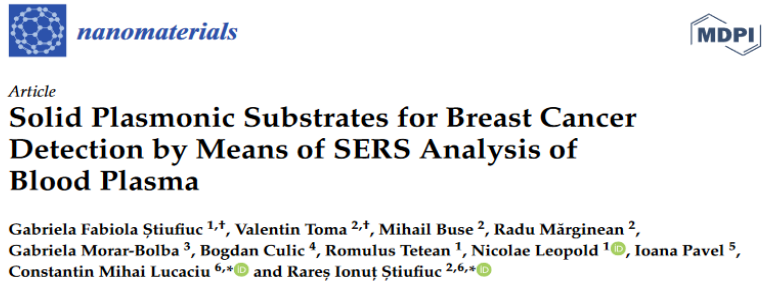




  - development of **new imaging strategies** on **nanostructures** and various **biological samples**
  - engaged in high-quality studies within the development of **targeted therapies, diagnostic or prognostic tools**

NanoBioPhysics Department

- **POC-A1-A1.1.4-E-2015** *"Development of a SERS-TFF based nanoscreening platform for early detection and assessment of breast disease progression using blood samples"*, 2016 – 2020, PI: Prof. Rareș Știufiuc, PhD UMFIH
- **PN-III-P4-ID-PCCF-2016-0112** "*Nanomateriale magnetoplasmonice multifunctionale NanoTEX*", 2018-2022, PI: Acad. prof. Burzo Emil, PhD Prof. Rareș Știufiuc, PhD UMFIH
- **PN-II-ID-PCE-2012-4-0531** "*New class of magnetic nanoparticles with potential applications in cancer therapy*", 2013-2016, PI: Assist. Prof. Cristian Iacoviță, UMIH
- **PN-II-RU-TE-2010-0259** "*The study of cancerous tumor cell interactions with nano-objects and their possible applications in cancer therapy*", 2010 – 2013, PI: Prof. Rareș Știufiuc, PhD UMFIH

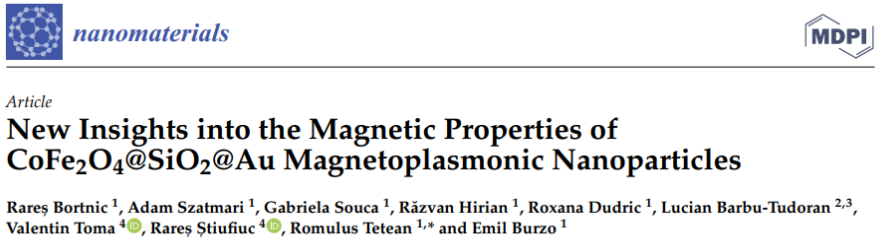

nanomaterials

MDPI

Article

Solid Plasmonic Substrates for Breast Cancer Detection by Means of SERS Analysis of Blood Plasma

Gabriela Fabiola Știufiuc [1,†], Valentin Toma [2,†], Mihail Buse [2], Radu Mărginean [2], Gabriela Morar-Bolba [3], Bogdan Culic [4], Romulus Tetean [1], Nicolae Leopold [1], Ioana Pavel [5], Constantin Mihai Lucaciu [6,*] and Rareș Ionuț Știufiuc [2,6,*]


nanomaterials

MDPI

Article

New Insights into the Magnetic Properties of $CoFe_2O_4$@SiO_2@Au Magnetoplasmonic Nanoparticles

Rareș Bortnic [1], Adam Szatmari [1], Gabriela Souca [1], Răzvan Hirian [1], Roxana Dudric [1], Lucian Barbu-Tudoran [2,3], Valentin Toma [4], Rareș Știufiuc [4], Romulus Tetean [1,*] and Emil Burzo [1]

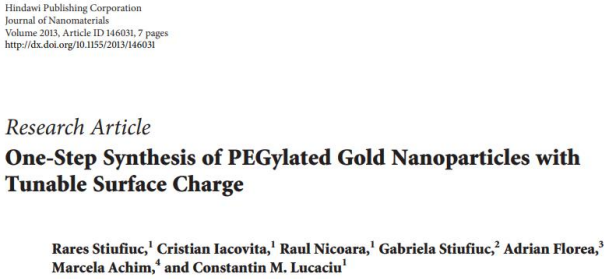

molecules

MDPI

Article

Small versus Large Iron Oxide Magnetic Nanoparticles: Hyperthermia and Cell Uptake Properties

Cristian Iacovita [1], Adrian Florea [2], Roxana Dudric [3], Emoke Pall [4], Alin Iulian Moldovan [5], Romulus Tetean [3], Rares Stiufiuc [1,5,*] and Constantin Mihai Lucaciu [1,*]

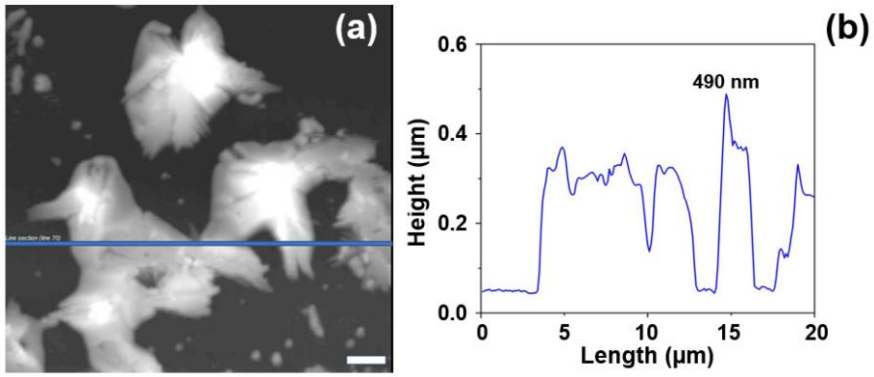

Hindawi Publishing Corporation
Journal of Nanomaterials
Volume 2013, Article ID 146031, 7 pages
http://dx.doi.org/10.1155/2013/146031

Research Article

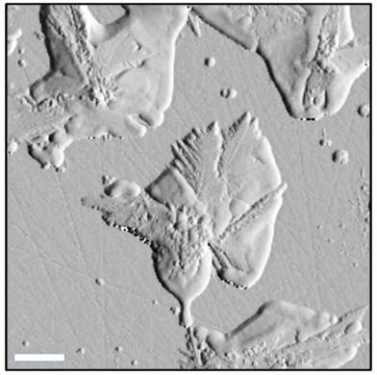
One-Step Synthesis of PEGylated Gold Nanoparticles with Tunable Surface Charge

Rares Stiufiuc,[1] Cristian Iacovita,[1] Raul Nicoara,[1] Gabriela Stiufiuc,[2] Adrian Florea,[3] Marcela Achim,[4] and Constantin M. Lucaciu[1]

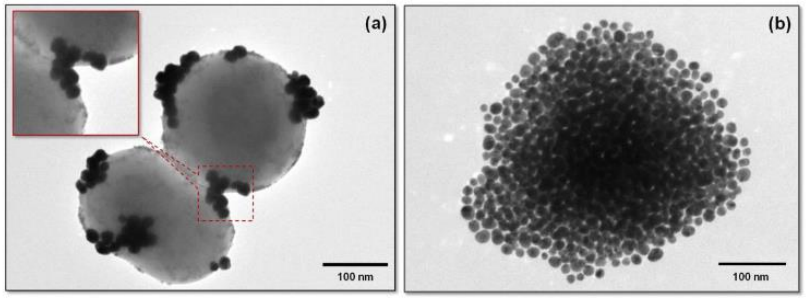
NanoBioPhysics Department



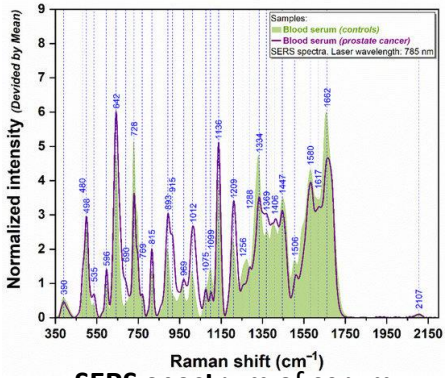
AFM topological image of several interconnected nanostars self-organized on the MgF2 surface (a). Corresponding cross-sectional analysis of AgNS (b). The scale bar represents 2 µm.



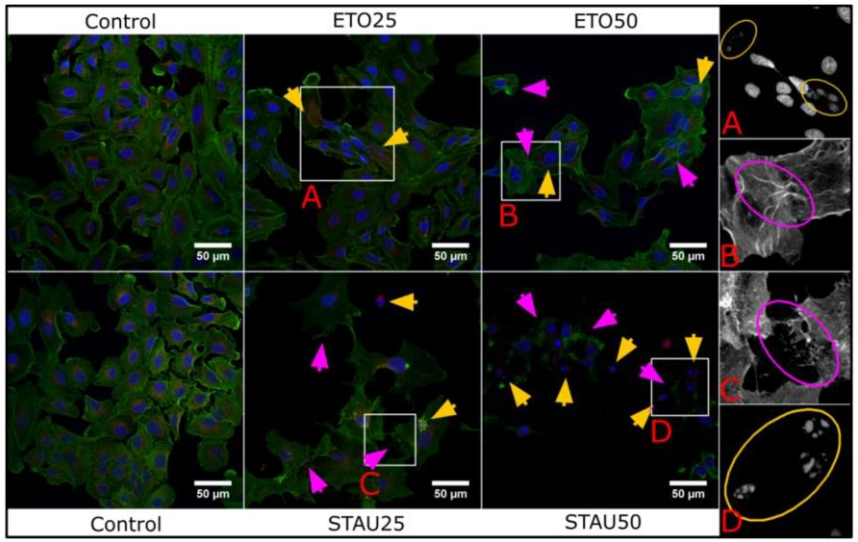
High resolution AFM topographical image of silver nanostars. The scale bar represents 2 µm.



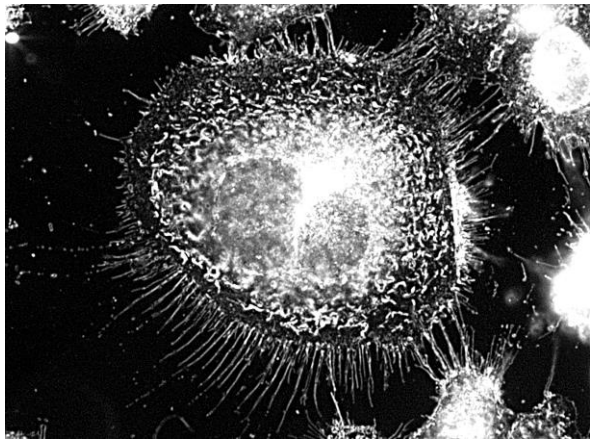
TEM images of magneto-liposomes decorated with PEG-Au NPs



SERS spectrum of serum isolated from PCa patients and healthy donors



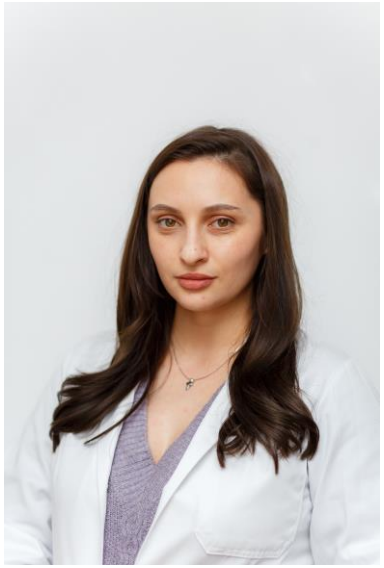
Confocal microscopy - Morphological changes induced by Eto and Stau in A549 cell line at IC25 and IC50



Hyperspectral microscopy - breast cancer cell intoxicated with Cadmium

in vivo Studies and Animal Facility Department

- A team of researchers with background in biochemistry and biology



Diana Tomuleasa (Gulei)
Biochemist
PhD, Researcher
Team leader

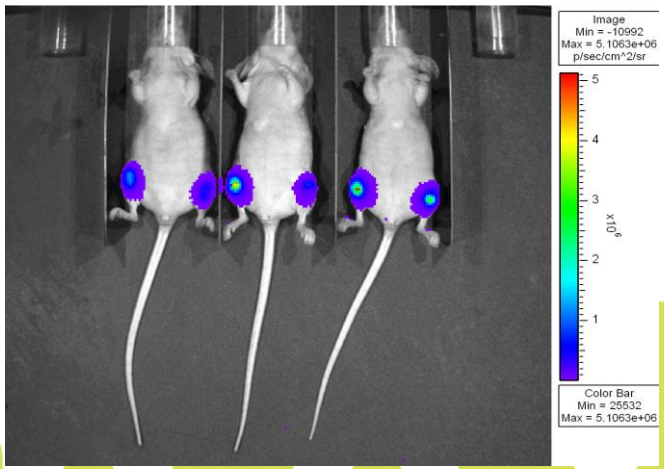
Raluca Munteanu
Biologist, PhD student

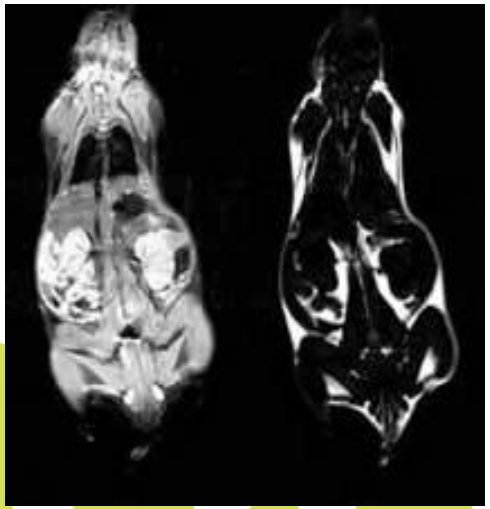
Richard Feder
Biologist

in vivo Studies and Animal Facility Department

- ***in vivo* research activity** complemented by the state-of-the-art infrastructure:
  - **The preclinical MRI for rodents** offers the possibility of anatomical and morphological data collection
  - **IVIS SPECTRUM**, a high-resolution instrument, for in vivo fluorescence and bioluminescence imaging
  - **Microsurgery rooms** with dedicated instruments and heated surgery platforms
  - **Hematological analyzer** for quantification of blood parameters of animal models
- **animal facility**
  - **advanced animal models** required for the success of preclinical research projects in order to develop targeted therapeutic strategies, new diagnostic/prognostic methods or innovative microsurgery approaches.
    - **imunocompromised mice** that are the ideal model for studying the *in vivo* behavior of human cells
    - **transgenic animal** models with targeted mutations that influence the animal phenotype toward the development of a specific pathological condition during their lifetime

in vivo Studies and Animal Facility Department





Immunocompromised mice

Transgenic mice
(mutation for lymphoma)

in vivo Studies and Animal Facility Department

- **Area of research interest:**
  - establishment of **preclinical animal models**
    - immunocompromised mice with tumor engraftments (orthotopic, subcutaneous)
    - transgenic mice for a specific disease development
  - **preclinical evaluation** of novel drugs and therapeutic combinations in animal models and toxicology analysis
  - **investigation of new diagnosis/prognosis biomarkers** in animal models
  - **imaging techniques** for disease behavior and cell or compound tracking **within a living organism**

in vivo Studies and Animal Facility Department

- PN-III-P4-ID-PCE-2020-118/Contract 221/03.03.2021-"**CYP26 role in myelodysplastic syndromes**"- Project leader: PI: Prof. Gabriel Ghiaur, PhD
- PN-III-P4-ID-PCE-2020-2252/Contract 225/09,03.2021- "**Harnessing the Ubiquitin-Proteasome System (UPS) to Suppress Tumors' Growth via Manipulating Generation of NF-κB**"- PI: Prof. Aaron Ciecanover, PhD
- PN-III-P2-2.1-PED-2019-3640 “Advanced preclinical validation of microRNA-205-5p-based therapeutic model for inhibition of epithelial to mesenchymal transition in melanoma metastasis MELAMET” 2020 – 2022, PI: Assist. Prof. Diana Gulei, PhD
- PN-III-P1-1.1-PD-2019-0805 “Next generation preclinical model for evaluation of microRNA-205-5p therapeutic role in limitation of melanoma metastasis” 2020 – 2022, PI: Assist. Prof. Diana Gulei, PhD
- PN-III-P4-ID-PCE-2020-1957 “Validation of epigenetic reprogramming of lung cancer models and anti-cancer activity through serial administration of repositioned 5-Azacytidine”2021-2024, PI: Prof. Ciuleanu Tudor, PhD

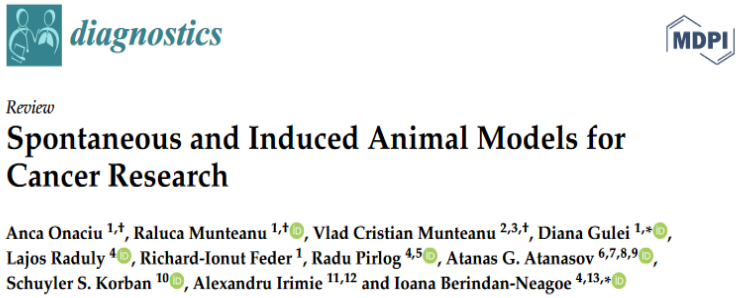

pharmaceutics

MDPI

Review

Adipocyte-Based Cell Therapy in Oncology: The Role of Cancer-Associated Adipocytes and Their Reinterpretation as Delivery Platforms

Raluca Munteanu [1,†], Anca Onaciu [1,†], Cristian Moldovan [1], Alina-Andreea Zimta [1], Diana Gulei [1], Angelo V. Paradiso [2], Vladimir Lazar [3] and Ioana Berindan-Neagoe [1,4,5,*]

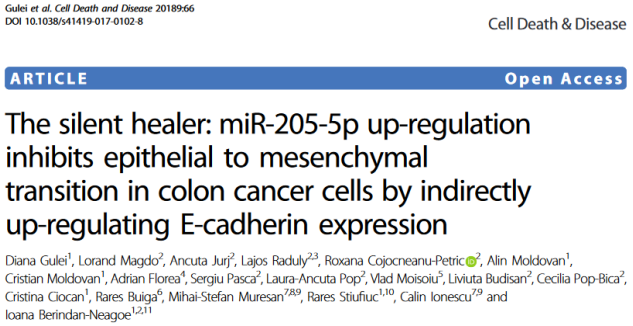

diagnostics

MDPI

Review

Spontaneous and Induced Animal Models for Cancer Research

Anca Onaciu [1,†], Raluca Munteanu [1,†], Vlad Cristian Munteanu [2,3,†], Diana Gulei [1,*], Lajos Raduly [4], Richard-Ionut Feder [1], Radu Pirlog [4,5], Atanas G. Atanasov [6,7,8,9], Schuyler S. Korban [10], Alexandru Irimie [11,12] and Ioana Berindan-Neagoe [4,13,*]


Gulei et al. Cell Death and Disease 2018:9:66
DOI 10.1038/s41419-017-0102-8

Cell Death & Disease

ARTICLE Open Access

The silent healer: miR-205-5p up-regulation inhibits epithelial to mesenchymal transition in colon cancer cells by indirectly up-regulating E-cadherin expression

Diana Gulei[1], Lorand Magdo[2], Ancuta Jurj[2], Lajos Raduly[2,3], Roxana Cojocneanu-Petric[2], Alin Moldovan[1], Cristian Moldovan[1], Adrian Florea[4], Sergiu Pasca[2], Laura-Ancuta Pop[2], Vlad Moisoiu[5], Liviuta Budisan[2], Cecilia Pop-Bica[2], Cristina Ciocan[1], Rares Buiga[6], Mihai-Stefan Muresan[7,8,9], Rares Stiufiuc[1,10], Calin Ionescu[7,9] and Ioana Berindan-Neagoe[1,2,11]


Taylor & Francis

Expert Review of Molecular Diagnostics

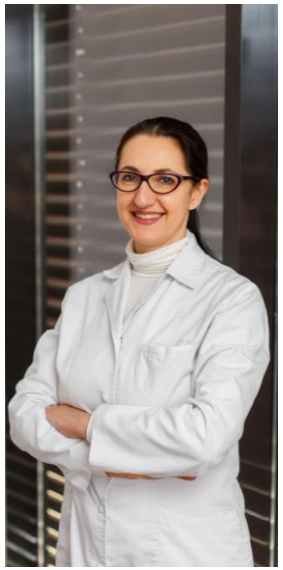
ISSN: 1473-7159 (Print) 1744-8352 (Online) Journal homepage: https://www.tandfonline.com/loi/iero20

CRISPR-based RNA editing: diagnostic applications and therapeutic options

Diana Gulei, Lajos Raduly, Ioana Berindan-Neagoe & George Adrian Calin

Translational Medicine Department

Assist. Prof.
Ciprian Tomuleasa
MD, PhD, Habil.
Team leader

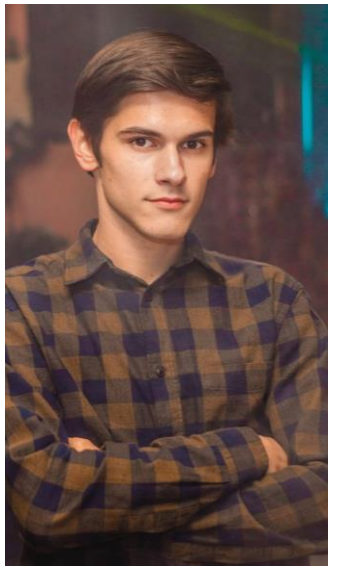


Diana Cenariu
Biotech. eng., PhD
Researcher

Bogdan Țigu
Biologist, PhD

Rareș Drula
Biologist,
PhD student

Andreea Zimța
Biologist,
PhD student



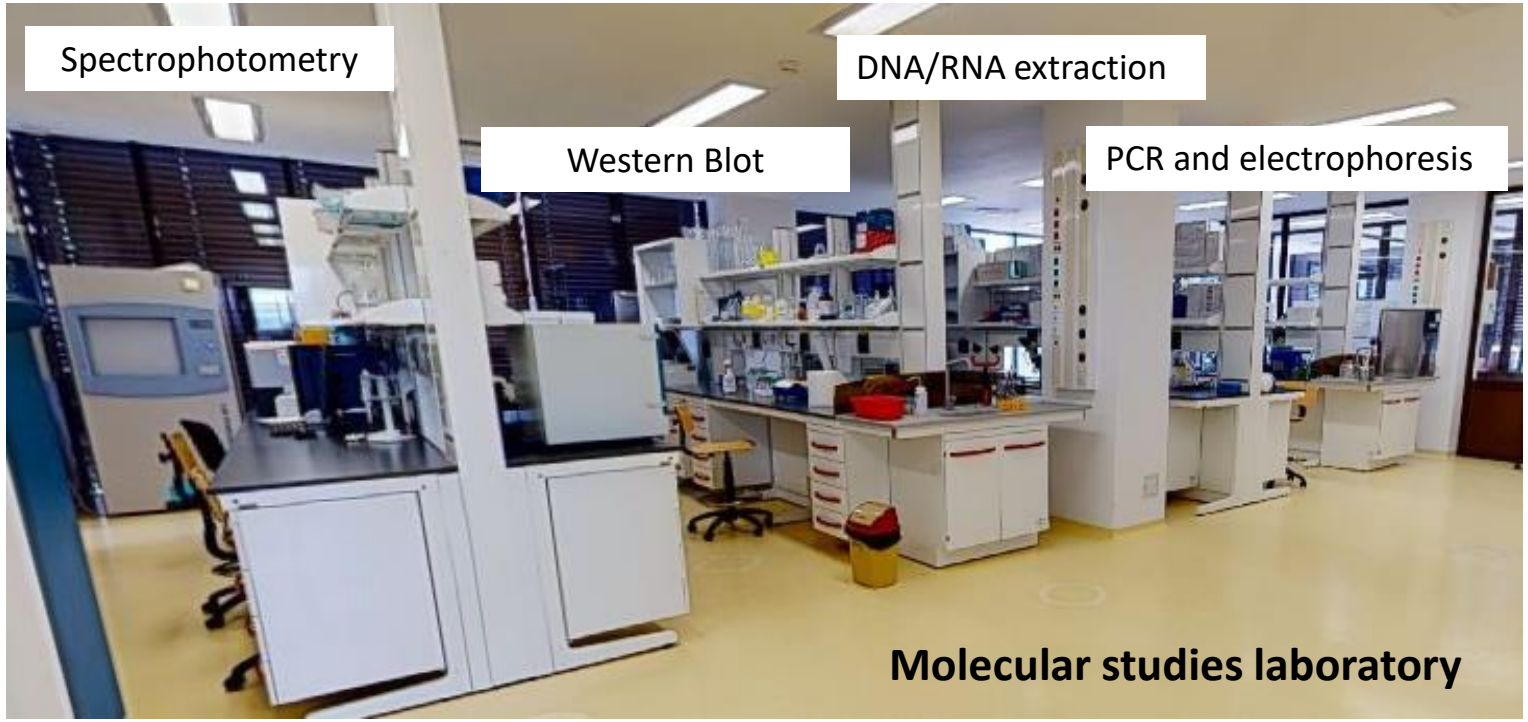
David Kegyes
Medical student

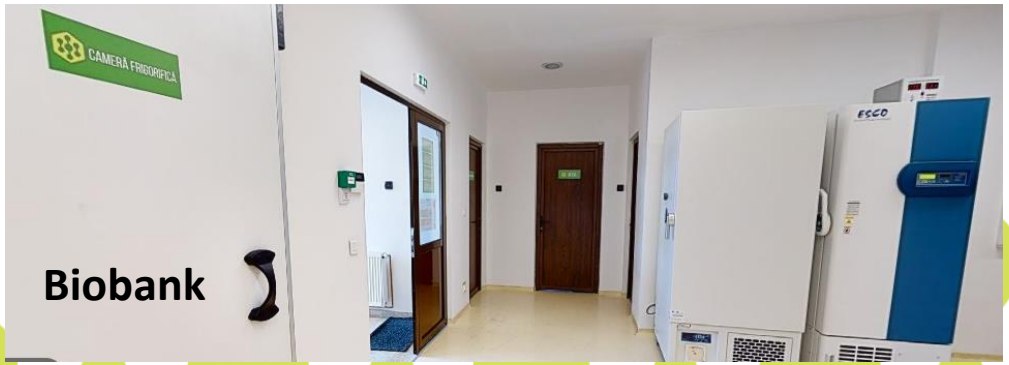
Mareike Peters
Medical student

Translational Medicine Department

- high-quality infrastructure for ***in vitro*** and **molecular studies**
  - **cell culture facility** with cell culture rooms and equipment for functional test
  - **inversed fluorescence microscope**
  - **PCR and RT-qPCR**
  - **electrophoresis platform**
  - **Western-Blot**
- the department provides services allowing:
  - **the identification of cell response** to novel drugs or therapeutic combinations
  - analysis of **biomarkers for new targeted therapeutics** from human samples or cell cultures
  - analysis of **biomarkers for disease diagnosis or prognosis** from human samples or cell cultures
  - fundamental studies for **assessment of new pathological mechanisms**
  - real data **evaluation of disease behavior** in response to drugs based on the extensive human samples' biobank

Translational Medicine Department





Translational Medicine Department

- **Area of research interest:**
  - **CAR T cell therapy** in cancer using novel surface antigens
  - **microRNAs exogenous modulation** for inhibition of malignant cell development
  - **repositioning of targeted therapeutics in malignancies** with similar pathological mechanisms
  - identification of **novel mechanisms of metastasis** and **possible therapeutic targets** for its limitation
  - assessment of **clinically relevant biomarkers** with role in new targeted therapies, early diagnosis or prognosis.
- all these strategies are developed in **close connection with the clinical sector**
    - large cohorts of biological samples from patients, as well as associated clinical data are vital for our studies and for the translational value of our data
- **the impact** of our research is maintained through a continuous collaboration at:
    - **national level** - Babes Bolyai University Cluj Napoca, Fundeni Clinical Institute, Carol Davila University of Medicine and Pharmacy, Bucharest
    - **international level** - Johns Hopkins Hospital, MD Anderson Cancer Center, Wurzburg University, Reykjavik University

Translational Medicine Department

- PN-III-P4-ID-PCE-2020-118/Contract 221/03.03.2021-"CYP26 role in myelodysplastic syndromes"- Project leader: PI: Prof. Gabriel Ghiaur, PhD
- PN-III-P4-ID-PCE-2020-2252/Contract 225/09,03.2021- "Harnessing the Ubiquitin-Proteasome System (UPS) to Suppress Tumors' Growth via Manipulating Generation of NF-κB"- PI: Prof. Aaron Ciecanover, PhD
- PN-III-P1-1.1-TE-2019-0271 “Supporting a team of young researchers in creating an independent research program based on the use of the Sleeping Beauty protocol for developing CAR T cells” – Acronym: SEATTLE, 2020 – 2022, PI: Assoc. Prof. Ciprian Tomuleasa, PhD , UMFIH
- RO03P “Strengthen haemophilia care and establish a national registry in Romania” 2020 – 2021, PI: Assoc. Prof. Ciprian Tomuleasa, PhD, UMFIH, IOCN, Societatea Romana de Hematologie
- 19-COP-0031 “HE-RO-IS strategic collaboration in hematology – Iceland collaboration (Reykjavik University)” – Acronym: HERO, 2020-2021 , PI: Assoc. Prof. Ciprian Tomuleasa, PhD UMIH
- PN-III-P1-1.1-PD-2019-1095 “Evaluation of the effect of human chorionic gonadotrophin in stem cell transplantation as a new method of pretransplant mobilization”, 2020-2022, PI: Andrei Cismaru, PhD, UMIH
- PN-III-P1-1.1-TE-2016-0919 “Sisteme nanoparticulate pentru identificarea unor oncogene și livrarea de inhibitori tumorali: noi strategii pentru tratamentul individualizat al leucemiilor de linie-B”, 2020-2022, PI: Sanda Boca, PhD, UBB, UMFIH

Cellular Physiology & Biochemistry
International Journal of Experimental Cellular Physiology, Biochemistry and Pharmacology

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Department of Hematology, Iuliu Hatieganu University of Medicine and Pharmacy, Gheorghe Marinescu Street, Cluj Napoca, 400124 (Romania)
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MicroRNA-155-5p Plays a Critical Role in Transient Leukemia of Down Syndrome by Targeting Tumor Necrosis Factor Receptor Superfamily Members

Valentina Sas[a,b] Sergiu Pasca[c] Ancuta Jurj[d] Laura Pop[d] Hideki Muramatsu[e] Hiroko Ono[e] Delia Dima[f] Patric Teodorescu[a] Sabina Iluta[a] Cristina Turcas[a] Anca Onaciu[c] Raluca Munteanu[c] Alina-Andreea Zimta[c] Cristina Blag[b,g] Gheorghe Popa[b,g] Elias Daniel Alexander von Gamm[a] Smaranda Arghirescu[h,i] Margit Serban[h,i] Sorin Man[b] Mirela Marian[f] Anca Colita[j,k] Mihnea Zdrenghea[a,f] Seiji Koji Yoshiyuki Takahashi[e] Ciprian Tomuleasa[a,c,f]

diagnostics MDPI

Article

The Influence of Methylating Mutations on Acute Myeloid Leukemia: Preliminary Analysis on 56 Patients

Sergiu Pasca [1,2], Cristina Turcas [1,3], Ancuta Jurj [2], Patric Teodorescu [1,3], Sabina Iluta [1,3], Ionut Hotea [1,3], Anca Bojan [1,3], Cristina Selicean [3], Bogdan Fetica [3], Bobe Petrushev [1], Vlad Moisoiu [1], Alina-Andreea Zimta [4], Valentina Sas [1], Catalin Constantinescu [1,3], Mihnea Zdrenghea [1,3], Delia Dima [3] and Ciprian Tomuleasa [1,2,3,*]

Journal of Clinical Medicine

Article

Differential Diagnosis of Malignant Lymphadenopathy Using Flow Cytometry on Fine Needle Aspirate: Report on 269 Cases

Carla Griesel [1,†], Minodora Desmirean [2,3,†], Tonya Esterhuizen [1], Sergiu Pasca [4], Bobe Petrushev [5], Cristina Selicean [6], Andrei Roman [6,7], Bogdan Fetica [6], Patric Teodorescu [2,6], Carmen Swanepoel [1], Ciprian Tomuleasa [2,6,*] and Ravnit Grewal [1,8,9]

The Nobel Prize in Chemistry 2004

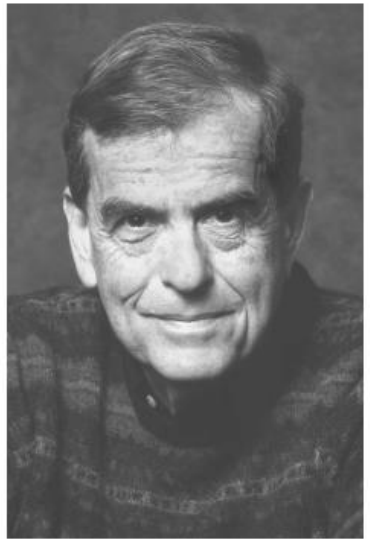

Photo: D. Porges

Aaron Ciechanover

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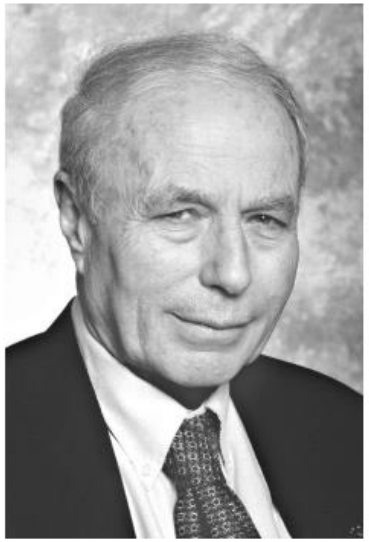

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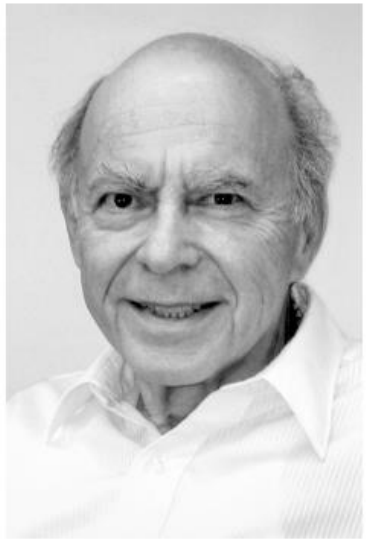

Photo from the Nobel Foundation archive.

Irwin Rose

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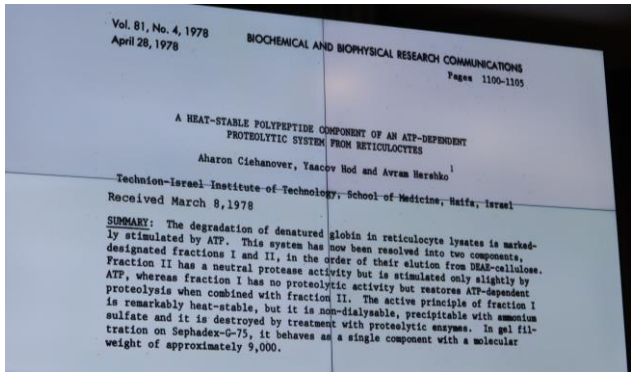


Vol. 81, No. 4, 1978
April 28, 1978

BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS
Pages 1100-1105

A HEAT-STABLE POLYPEPTIDE COMPONENT OF AN ATP-DEPENDENT PROTEOLYTIC SYSTEM FROM RETICULOCYTES

Aharon Ciehanover, Yaacov Hod and Avram Hershko[1]

Technion-Israel Institute of Technology, School of Medicine, Haifa, Israel

Received March 8,1978

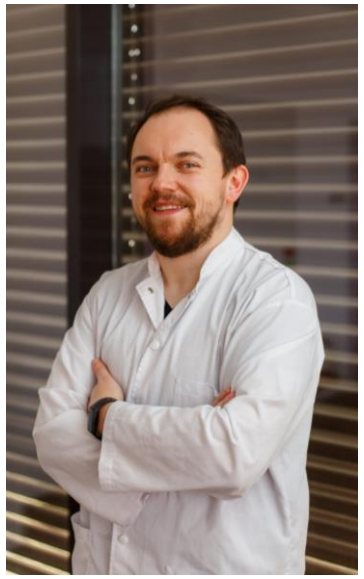
SUMMARY: The degradation of denatured globin in reticulocyte lysates is markedly stimulated by ATP. This system has now been resolved into two components, designated fractions I and II, in the order of their elution from DEAE-cellulose. Fraction II has a neutral protease activity but is stimulated only slightly by ATP, whereas fraction I has no proteolytic activity but restores ATP-dependent proteolysis when combined with fraction II. The active principle of fraction I is remarkably heat-stable, but it is non-dialysable, precipitable with ammonium sulfate and it is destroyed by treatment with proteolytic enzymes. In gel filtration on Sephadex-G-75, it behaves as a single component with a molecular weight of approximately 9,000.

August 2022

Proteomics and Metabolomics Department

Prof. Cristina-Adela Iuga
Pharmacist, PhD, Habil.
Team leader

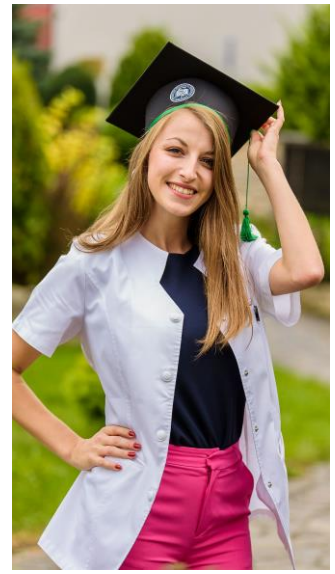
Maria Iacobescu
Pharmacist, PhD
Researcher



Radu Moldovan
Pharmacist, PhD
Researcher

Ioana Pralea
Pharmacist
PhD student

Luisa Bogos
Pharmacist
PhD student



Andreea Soporan
Pharmacist
PhD student

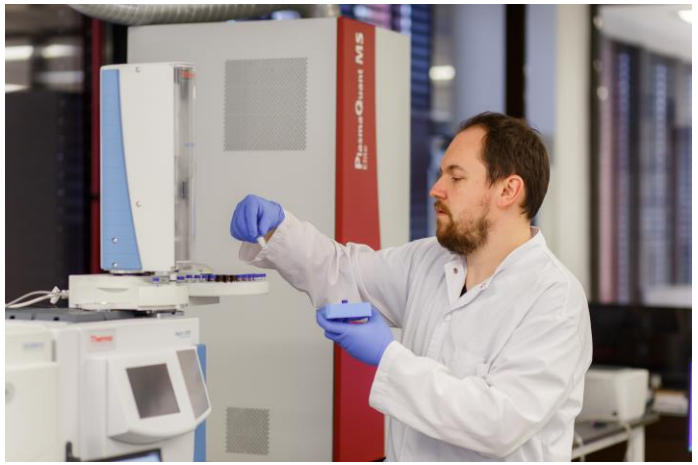
Proteomics and Metabolomics Department

- offers a state-of-the-art infrastructure for **applied omics technologies** in biomedical field
- **mass spectrometry- based platform** :
    - **Proteomics** - 1D and 2D nanoUHPLC-ESI-QTOF-IMS, MALDI-QTOF-IMS
    - **Metabolomics** - microUHPLC-ESI-QTOF-IMS, GC/MS/MS
    - **Metallomics** – ICP-MS

- services allowing sample preparation for proteomics and metabolomics, **identification and quantification of proteins, metabolites, metals and several non-metals** from a wide range of specimens, including **serum, plasma, tissue (fresh frozen tissue, formalin-fixed paraffin-embedded (FFPE) tissue) or cell lysate**
- **Area of research interest:**
    - **high-resolution mass spectrometry (HRMS) based biomarker discovery** towards precision medicine by employing:
    - **targeted and untargeted proteomics** (profiling) of **cell cultures, biofluids and tissues** in breast cancer, pancreatic cancer, liver cancer, leukemia
    - **targeted and untargeted metabolomics** (profiling) of **cell cultures, biofluids** in cardiovascular disease, breast cancer, neurological disorders
    - **metals and non-metals profiling of nanomaterials, biofluids**, **tissues**

Proteomics and Metabolomics Department

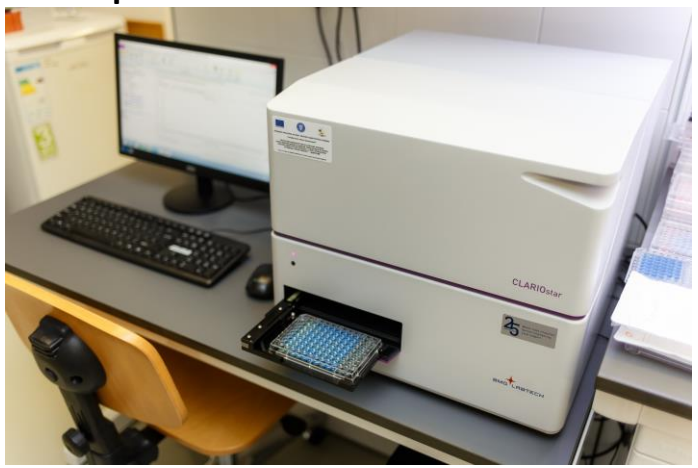
nanoUHPLC-ESI- QTOF-IMS
MALDI-QTOF-IMS

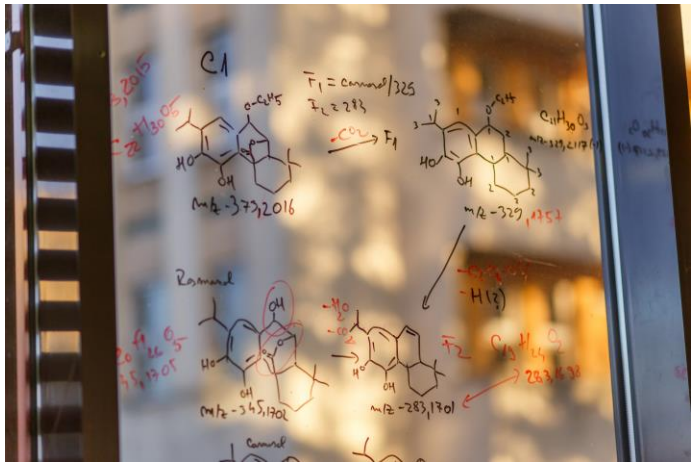


GC MS/MS ICP MS

microUHPLC-ESI-QTOF-IMS

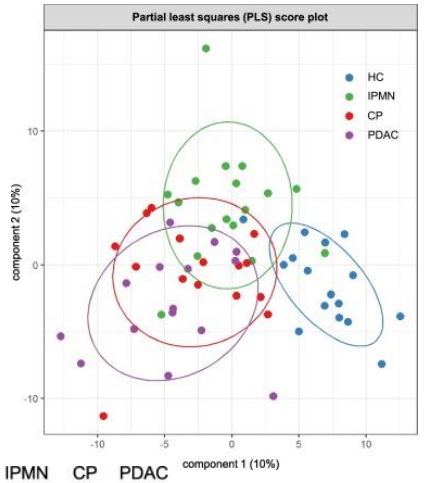
Microplate reader

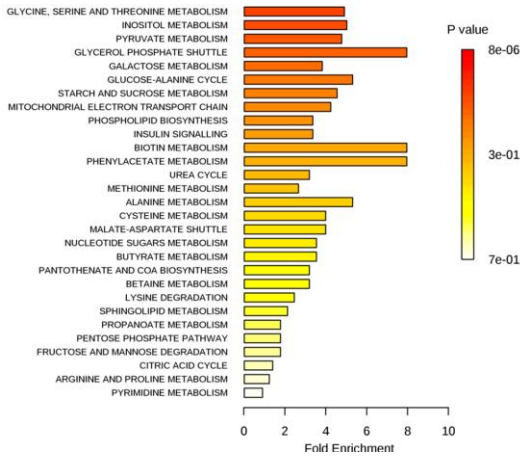


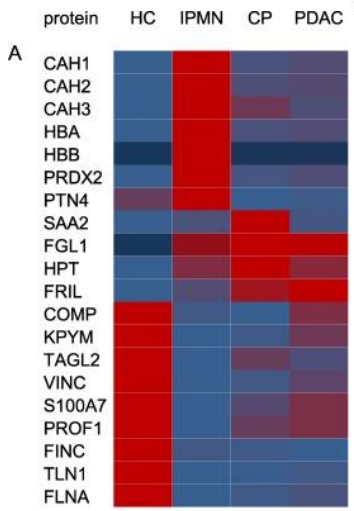


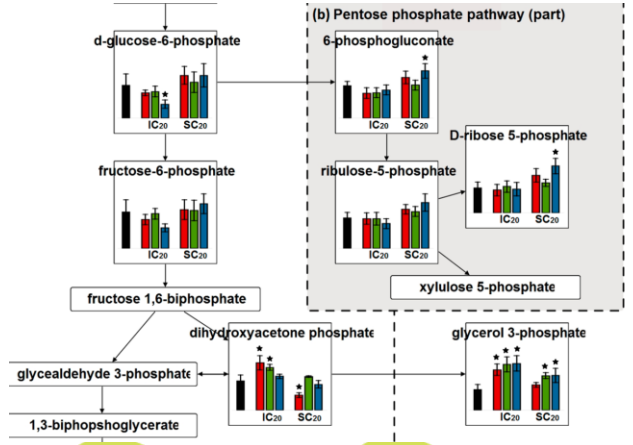
Proteomics and Metabolomics Department

- PN-III-P1-1.1-PD2019-0852 „***Potential proteomic signature-based biomarker for intrahepatic cholangiocarcinoma diagnosis***”, 2020-2022, PI: Maria Ilieș, PhD UMFIH
- PN-III-P1-1.1-PD-2019-0929 “***Stereoselective metabolomics for neurological and neurodegenerative diseases***”, 2020-2022, PI: Radu Moldovan, PhD UMFIH
- PN-III-P1-1.2-PCCDI-2017-0323 “*The use of* ***Gamma irradiation in biotechnological processes with applications in bioeconomy BIO-GAMMA***”; 2018 – 2020, PI: Prof. Cristina Adela Iuga, PhD UMFIH
- ERANET-Marine Biotechnology. ***New tools for prospecting the marine bone-degrading microbiome for new enzymes*** *(PROBONE*). 2018-2020, PI: Prof. Ramona Suharoschi, PhD USAMV
- PN-III-P4-ID-PCE-2020-118/Contract 221/03.03.2021-"**CYP26 role in myelodysplastic syndromes**"- Project leader: PI: Prof. Gabriel Ghiaur, PhD
- PN-III-P4-ID-PCE-2020-2252/Contract 225/09,03.2021- "**Harnessing the Ubiquitin-Proteasome System (UPS) to Suppress Tumors' Growth via Manipulating Generation of NF-κB**"- PI: Prof. Aaron Ciecanover, PhD
- P-40-318/10/2016-BIOGENONCO-Knowledge transfer of clinical application of biogenomics in oncology and other domains- 2016-2022, subsidiary contract no. 28781/23.09.2020 - **Antitumoral activity and composition optimization of Nera Plant Vitocomplex**-PI: Assist. Prof. Alin Mihăilă, PhD, UBB
- PN-III-P2-2.1-PED-2019-3640 “**Advanced preclinical validation of microRNA-205-5p-based therapeutic model for inhibition of epithelial to mesenchymal transition in melanoma metastasis MELAMET**“ 2019-2022-PI: Assist. Prof. Diana Gulei, PhD
- PN-III-P4-PCE-2020-1091 **Thromboelastography – changing the paradigm in hemostasis assessment in advanced liver disease** –2021-2023- PI: Assoc. Prof. Bogdan Procopet, MD, PhD



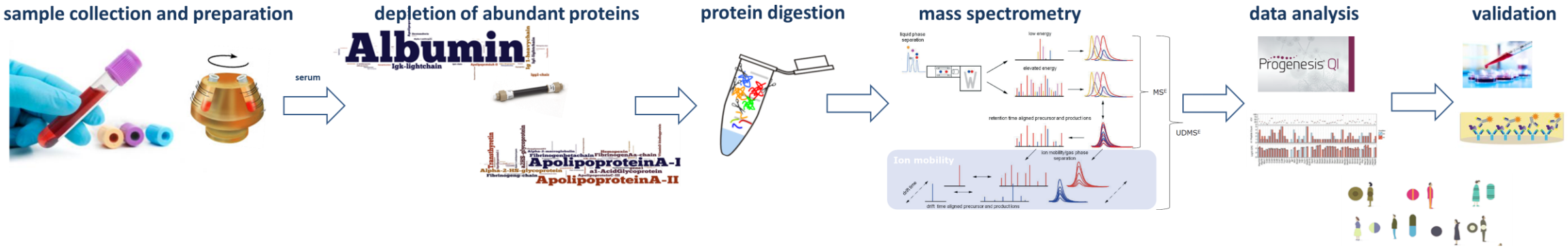


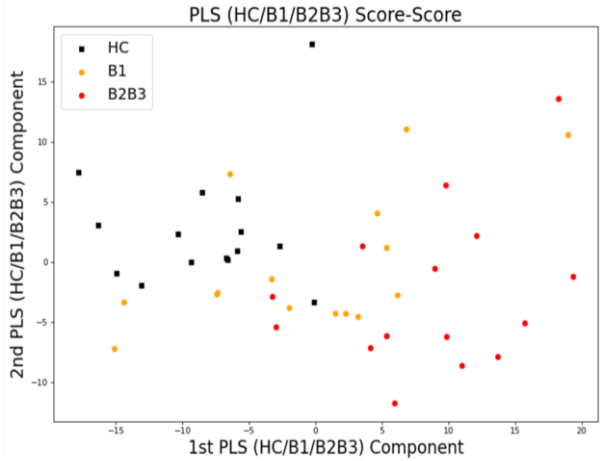




Proteome profiling of serum or plasma

Workflow





Proteins to significantly predict CD diagnosis and their correlation coefficient to clinical parameters at baseline

No.	Protein name	Symbol	AUC	ACC	SEN	SPE	HBI	CRP	Fcal	SES-CD
1.	WD repeat-containing protein 31	WDR31	0.70	0.78	0.93	0.47	0.69	0.52	0.58	0.68
2.	Zinc finger protein 321	ZNF321P	0.67	0.71	0.80	0.53	0.58	0.49	0.52	0.61
3.	Haptoglobin	HP	0.65	0.69	0.77	0.53	0.58	0.50	0.50	0.61
4.	ADP-ribosylation factor 1	ARF1	0.63	0.69	0.80	0.47	0.57	0.42	0.51	0.56
5.	Scm-like with four mbt domains 2	SFMBT2	0.62	0.71	0.90	0.33	0.55	0.31	0.51	0.55
6.	Complement Factor H Related 5	CFHR5	0.60	0.69	0.87	0.33	0.61	0.48	0.59	0.64
7.	Plexin-A1	PLXNA1	0.53	0.67	0.93	0.13	0.51		0.33	0.42
8.	Serum amyloid A-1 protein	SAA1	0.47	0.60	0.87	0.07	0.51	0.55	0.45	0.54

Liver cancer group

International Immunopharmacology 94 (2021) 107467

Contents lists available at ScienceDirect

International Immunopharmacology

journal homepage: www.elsevier.com/locate/intimp

Serum levels of soluble programmed death-ligand 1 (sPD-L1): A possible biomarker in predicting post-treatment outcomes in patients with early hepatocellular carcinoma

Tudor Mocan [a,b,*], Maria Ilies [d], Iuliana Nenu [a,b], Rares Craciun [a,b], Adelina Horhat [a,b], Ruxandra Susa [a,b], Iulia Minciuna [a,b], Ioana Rusu [e], Lavinia-Patricia Mocan [f], Andrada Seicean [a,b], Cristina Adela Iuga [c,d], Nadim Al Hajjar [g], Mihaela Sparchez [h], Daniel-Corneliu Leucuta [i], Zeno Sparchez [a,b]

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World Journal of Gastroenterology

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REVIEW

Novel approaches in search for biomarkers of cholangiocarcinoma

Lavinia-Patricia Mocan, Maria Ilieș, Carmen Stanca Melincovici, Mihaela Spârchez, Rareș Crăciun, Iuliana Nenu, Adelina Horhat, Cristian Tefas, Zeno Spârchez, Cristina Adela Iuga, Tudor Mocan, Carmen Mihaela Mihu

Cancer Immunology, Immunotherapy
https://doi.org/10.1007/s00262-022-03309-y

RESEARCH

PD-L1 expression on immune cells, but not on tumor cells, is a favorable prognostic factor for patients with intrahepatic cholangiocarcinoma

Lavinia Patricia Mocan[1] · Rares Craciun[2] · Cristiana Grapa[3] · Carmen Stanca Melincovici[1] · Ioana Rusu[4] · Nadim Al Hajjar[5] · Zeno Sparchez[2] · Daniel Leucuta[6] · Maria Ilies[7] · Mihaela Sparchez[8] · Tudor Mocan[9] · Carmen Mihaela Mihu[1]

Received: 19 August 2022 / Accepted: 10 October 2022

Gastrointestinal research group

Journal of Personalized Medicine

MDPI

Article

Serum Interleukin (IL)-23 and IL-17 Profile in Inflammatory Bowel Disease (IBD) Patients Could Differentiate between Severe and Non-Severe Disease

Laura A. Lucaciu [1,†], Maria Ilieș [2,†], Ștefan C. Vesa [3,*], Radu Seicean [4], Shahida Din [5], Cristina Adela Iuga [2,6] and Andrada Seicean [1,7]

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check for updates

Citation: Lucaciu, L.A.; Ilieș, M.; Vesa, Ș.C.; Seicean, R.; Din, S.; Iuga, C.A.; Seicean, A. Serum Interleukin

European Review for Medical and Pharmacological Sciences 2022; 26: 1341-1349

Leptin involvement in the survival of pancreatic adenocarcinoma patients with obesity and diabetes

T. MAN[1], R. SEICEAN[2], L. LUCACIU[1], D. LEUCUTA[3], M. ILIES[4], C. IUGA[5], L. PETRUSEL[1], A. SEICEAN[1]

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[2]Department of Surgery, 1st Surgical Clinic, Emergency County Hospital, 'Iuliu Hatieganu'

diagnostics

MDPI

Article

Clinical Utility of the Contrast-Enhanced Endoscopic Ultrasound Guided Fine Needle Aspiration in the Diagnosis of Pancreatic Cyst

Miruna Patricia Olar [1], Sorana D. Bolboacă [2,*], Cristina Pojoga [1,3,4], Ofelia Moșteanu [1,3], Marcel Gheorghiu [1,3], Radu Seicean [5], Ioana Rusu [1,3], Zeno Sparchez [1,3], Nadim Al Hajjar [3,6] and Andrada Seicean [1,3]

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d Hepatology, Croitorilor Str., no. 19-21,
sychotherapy, International Institute for Advanced Study of h, Babeș-Bolyai University, Sindicatelor Str, no. 7,
anu University of Medicine and Pharmacy, Clinicilor Str., no. 3-5,
ganu University of Medicine and Pharmacy, oca, Romania

Cellular and Molecular Biology
E-ISSN : 1165-158X / P-ISSN : 0145-5680
www.cellmolbiol.org
C M B Association Publisher

Original Research

Serum JAK/STAT profile is related to the IL expression but not with the outcome in pancreatic adenocarcinoma patients

Livia Petrusel[1], Maria Ilies[2], Daniel Leucuta[3], Ioana Rusu[4], Andrada Seicean[1*], Cristina Iuga[2], Radu Seicean[5]

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[5] First Surgery Clinic, Iuliu Hatieganu University of Medicine and Pharmacy, 3-5, Clinicilor street,400006, Cluj-Napoca, Romania

Newborn Screening Facility

Currently under development

- Financed through a SEE grant in collaboration with **Reykjavik University**
  - **Partner 1:** Prof. Ólafur E. Sigurjónsson, PhD, Reykjavik University, Reykjavik, Iceland (School of Science and Engineering)
  - **Partner 2:** National Alliance for Rare Diseases Romania
- Pilot project – first extended newborn screening platform in Romania

Improving access to preventive healthcare services by development of an analytical laboratory and a neonatal screening pilot program for vulnerable groups, including Roma

AP1.26

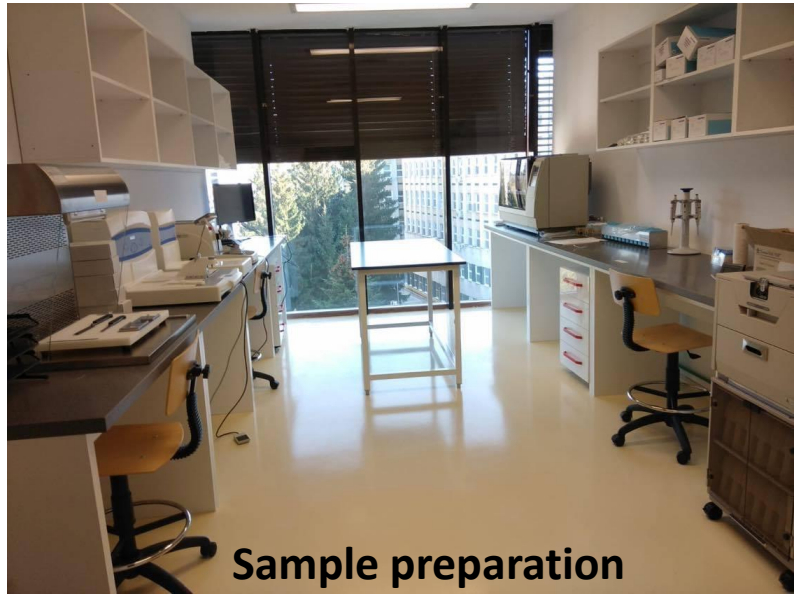
Hematology Laboratory

- Dedicated to support the clinical evaluation of coagulation factors for patients with hemophilia across Romania for disease management
- **RO03P** "**Strengthen haemophilia care and establish a national registry in Romania**" 2020 – 2021, project manager Ciprian Tomuleasa PhD, UMFIH, IOCN, Romanian Society of Hematology (89000 CHF)

novo nordisk haemophilia foundation

• Laboratory of Anatomic Pathology- Future facility

- research studies involving anatomopathological activities: human and animal models samples
- to support the clinical sector in the domain of anatomical pathology: diagnostic, staging, second opinion and storage


Sample preparation


Sample evaluation

Bobe Petrushev MD,
Anatomical pathologist
Volunteer based collaboration

CCMA-MedFUTURE Research Services 2021-2022

Code		Service	Service description
PM 1	1	Tissue proteome profiling- in solution digestion- identification and relative quantification (1 biological sample)	Shotgun proteomics technique is used for the determination of the protein profile of tissue samples. The service includes the extraction of proteines from tissue (fresh frozen) and processing of proteins (reduction and alkylation, enzymatic digestion) and their separation and analysis by chromatographic techniques coupled with mass spectrometry. The resulting profiles can be compared (control vs. disease), following the significantly modified proteins between the two groups. The service includes the identification of proteins using standard databases.
	2	Tissue proteome profiling- in solution digestion- identification and relative quantification (30 biological samples)	
PM 2	1	FFPE Tissue (formalin-fixed paraffin-embedded samples) proteome profiling- in solution digestion- identification and relative quantification (1 biological sample)	Shotgun proteomics technique is used for the determination of the protein profile of paraffin embedded tissue samples. The service includes tissue deparaffination and processing for protein extraction. Proteins are subjected to reduction and alkylation, enzymatic digestion while their separation and analysis is performed by chromatographic techniques coupled with mass spectrometry. The resulting profiles can be compared (control vs. disease), following the significantly modified proteins between the two groups. The service includes the identification of proteins using standard databases.
	2	FFPE Tissue (formalin-fixed paraffin-embedded samples) proteome profiling- in solution digestion- identification and relative quantification(30 biological samples)	
PM 3	1	Cell culture proteome profiling - in solution digestion- identification and relative quantification (1 biological sample)	Shotgun proteomics technique is used for the determination of the protein profile of cell pellet. Full sample preparation in performed, including extraction of proteins from the cell pellet, reduction and alkilation and in solution enzymatic digestion. Peptides resulted are separated and analysed by chromatographic techniques coupled with mass spectrometry. The resulting profiles can highlight adaptations of cellular metabolism as a result of the treatment applied on cell cultures (treatment vs control). The service includes the identification of proteins using standard databases.
	2	Cell culture proteome profiling - in solution digestion- identification and relative quantification (30 biological samples)	

Code		Service	Service description
PM 4	1	Serum/Plasma proteome profiling- in solution digestion- identification and relative quantification (1 biological sample)	Serum/Plasma proteome profiling is done after protein isolation by precipitation, reduction and alkylation, and digestion by trypsin. Resulting peptides are then separated by high pressure liquid chromatography and identified by high resolution mass spectrometry. By using specialized software, all proteins of the original sample are identified and relatively quantified.
	2	Serum/Plasma proteome profiling- in solution digestion- identification and relative quantification (30 biological samples)	
PM 5	1	Serum/Plasma proteome profiling- 6 high abundant protein depletion- in solution digestion (1 biological sample)	Serum/Plasma proteome profiling is done after depletion of 6 high abundant proteins (serum albumin, immunoglobulin gamma, immunoglobulin alpha, serotransferrin, haptoglobin, alpha-1-antitrypsin). After depletion, proteins are concentrated by precipitation, reduced and alkylated, and digested by trypsin. Resulting peptides are then separated by high pressure liquid chromatography and identified by high resolution mass spectrometry. By using specialized software, all proteins of the original sample are identified and relatively quantified.
	2	Serum/Plasma proteome profiling- 6 high abundant protein depletion- in solution digestion (30 biological samples)	
PM 6		Sandwich ELISA kit determination (30 biological samples) *the cost of the kit is not included	Sandwich ELISA kit determination are done following each kit instructions for sample preparation and analysis. Microplates are red by a multiplate reader and data is analyzed by a specialized software.
PM 7	1	UHPLC/QTOF metabolic profiling in plasma	Plasma metabolic profiling is performed using LC-MS untargeted methods. After lipid and protein removal, the sample is analyzed using chromatographic methods appropriate for different typers of metabolites (polar/non-polar). The resulting profiles are then compared (control vs. diseased), determining the metabolites which are significantly different among those groups, thus possibly having biomarker roles. This determination does not include the idenfication and validation of possible biomarkers*.
	2	UHPLC/QTOF metabolic profiling in plasma	

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