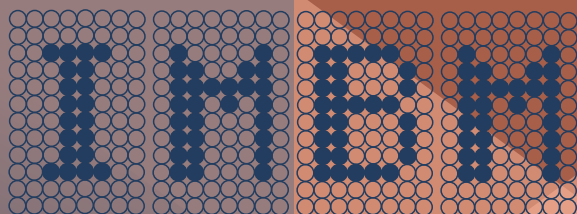


**INSTITUTE OF MOLECULAR BIOMEDICINE**  
**Faculty of Medicine, Comenius University, Bratislava**



**2018**

## **IMBM 2018**

**1 research institute**

**10 years**

**1 professor**

**3 associate professors**

**9 postdocs**

**11 PhD students**

**8 diploma thesis students**

**4 bachelor students**

**2 APVV grants**

**1 KEGA grant**

**5 VEGA grants**

**5 UK grants**

**26 CC/IF publications**

**946 SCI citations**



# SCIENTOMETRIC DATA

**NUMBER OF CC/IF PUBLICATIONS 26  
OF THESE WITH FIRST/LAST AUTHORS FROM IMBM 16  
CUMULATIVE IF 59,9**

Medical Hypotheses 122 (2019) 41–44



Contents lists available at ScienceDirect

Medical Hypotheses

journal homepage: [www.elsevier.com/locate/mehy](http://www.elsevier.com/locate/mehy)

Reverse phenotype transfer via fecal microbial transplantation in inflammatory bowel disease

Robert Liptak, Barbora Gromova, Martin Maronek, Roman Gardlík\*

*Institute of Molecular Biomedicine, Faculty of Medicine, Comenius University, Bratislava 4, 811 08 Bratislava, Slovakia*

Article

Thieme

## Gender Differences in Cardiometabolic Risk Factors in Metabolically Healthy Normal Weight Adults with Central Obesity

Authors

Katarína Šebeková<sup>1</sup>, Melinda Csongová<sup>1</sup>, Radana Gurecká<sup>1,2</sup>, Zora Krivošíková<sup>3</sup>, Jozef Šebek<sup>4</sup>

Affiliations

<sup>1</sup> Institute of Molecular Biomedicine, Faculty of Medicine, Comenius University, Bratislava, Slovakia

811 08 Bratislava

Slovakia

Tel.: +421/2/59357 429; Fax: +421/2/59357 631

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doi:10.1017/erm.2017.12

REVIEW

## Cell-free DNA: the role in pathophysiology and as a biomarker in kidney diseases

PETER CELEC<sup>1,2,3\*</sup>, BARBORA VLKOVÁ<sup>1</sup>, LUCIA LAUKOVÁ<sup>1</sup>, JANKA BÁBIČKOVÁ<sup>1,5</sup>,  
PETER BOOR<sup>1,4</sup>

<sup>1</sup>Institute of Molecular Biomedicine, Faculty of Medicine, Comenius University, Bratislava, Slovakia, <sup>2</sup>Institute of Pathophysiology, Faculty of Medicine, Comenius University, Bratislava, Slovakia, <sup>3</sup>Department of Molecular

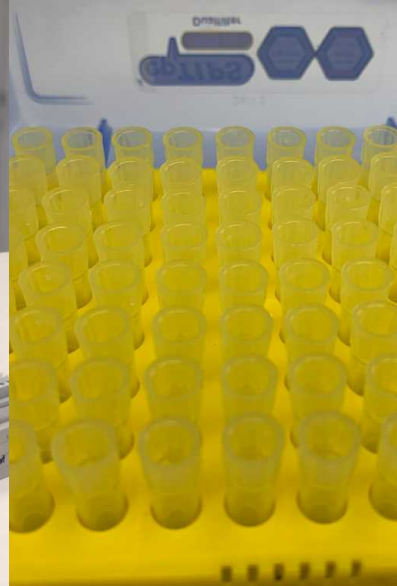
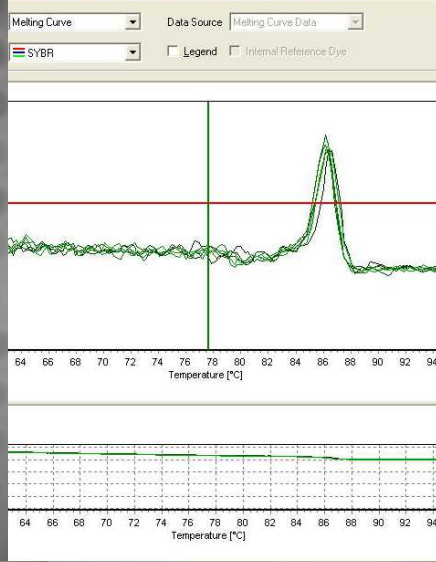
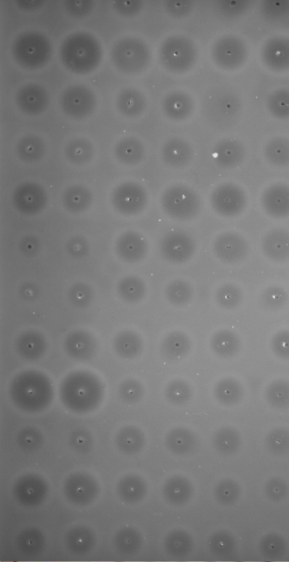
PLOS ONE

RESEARCH ARTICLE

Salivary creatinine and urea are higher in an experimental model of acute but not chronic renal disease

Alexandra Kovalčíková<sup>1</sup>, Katarína Janšáková<sup>1</sup>, Marianna Gyurászová<sup>1</sup>,  
Ludmila Podracká<sup>2</sup>, Katarína Šebeková<sup>1</sup>, Peter Celec<sup>1,3,4</sup>, Ľubomíra Tóthová<sup>1</sup> \*

<sup>1</sup> Institute of Molecular Biomedicine, Faculty of Medicine, Comenius University, Bratislava, Slovakia, <sup>2</sup> 1st Department of Pediatrics, Faculty of Medicine, Comenius University, Bratislava, Slovakia, <sup>3</sup> Institute of Pathophysiology, Faculty of Medicine, Comenius University, Bratislava, Slovakia, <sup>4</sup> Department of Molecular



# THE YEAR 2018 AT IMBM

## The view of the head of the institute

First the positives... 4 of our PhD students successfully defended their theses, Dr. Krajčík Lauková won the Falling Walls Lab Slovakia competition, we managed to co-organize the DNA day conference and published 26 articles. On the other hand, we failed to meet our envisioned goals regarding the quality of our publications, despite being involved in numerous scientific councils we were not able to change the biased evaluation criteria, and the first year of Introduction to science was a complete disaster... The year 2018 was anything but boring.

Evaluation means comparison. To compare requires knowing the alternatives. This year we visited the Washington Uni in St. Louis, Harvard in Boston and NYU in New York... to be able to evaluate ourselves. So, where do we stand? There is nothing we cannot do, but a lot that we do not do - unused, maybe wasted potential. The lab space and equipment is larger and better than abroad. The institute is bigger than ever before, but more staff does not mean more productivity, just more staff... With 5 VEGA grants and 2 APVV grants running - we have had harder years. The more grants, the less outputs. This negative association was confirmed again.

Orders, public tendering, waiting, there are numerous ways how we defocus ourselves from the real work. It is neither the equipment, nor science quantity, but rather focus on research and its quality that make top universities and research teams.

... top research teams as the one of prof. Peter Boor in Aachen. His Science Translational Medicine paper with our affiliation is an honour and motivation. We are proud to cooperate. We have met and learned from clinicians that lead top teams - Dr. Hauser or Dr. Hundstad, it is of utmost importance for biomedical research in Slovakia that the best clinicians - scientists such as prof. Mego are supported and followed by young students.

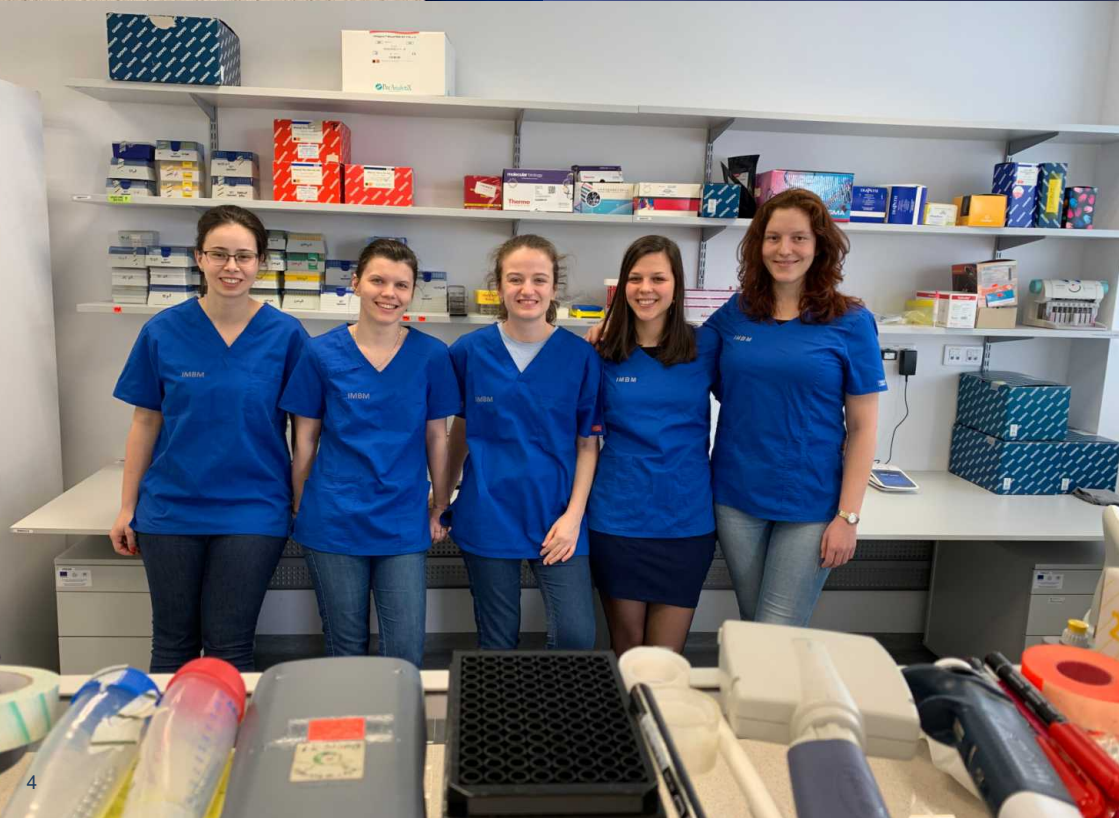
We have done our best to stimulate students with our new course. In this case we failed. The vast majority of medical students do not attend the lectures, try to cheat, claim a Slovak translation of PubMed... These are future medical doctors. An exclamation mark for the whole faculty.

Let us learn for 2019!



Peter Celec





# RESEARCHERS

## PROFESSORS



**KATARÍNA ŠEBEKOVÁ**, assoc. prof., MD, DrSc

CC/IF publications - 153, SCI citations - 1880,  
h-index - 26

metabolic syndrome, diabetes mellitus, advanced  
glycation end products, clinical biochemistry,  
pathogenesis of renal diseases

**katarina.sebekova@imbm.sk**



**PETER CELEC**, assoc. prof., MD, Ing, MSc, DrSc, MPH

CC/IF publications - 205, SCI citations - 2059,  
h-index - 26

extracellular DNA, testosterone, salivary  
biomarkers, sepsis

**peter.celec@imbm.sk**



**PETER BOOR**, prof., MD, PhD

CC/IF publications - 130, SCI citations - 3085,  
h-index - 30

renal fibrosis, nephropathology,  
immunopathomechanisms, models of renal  
diseases, imaging

**pboor@ukaachen.de**



**JÚLIUS HODOSY**, assoc. prof., MD, MSc, PhD, MPH

CC/IF publications - 87, SCI citations - 766,  
h-index - 17

behavioral analysis, sex steroids, oxidative stress,  
animal models of diseases, sleep apnea syndrome

**hodosy@gmail.com**

## POSTDOCTORANDS



**VERONIKA BORBÉLYOVÁ**, MSc, PhD

CC/IF publications - 14, SCI citations - 29,  
h-index - 3

animal models of autism spectrum disorder,  
effects of prenatal testosterone on postnatal  
behavior, metabolic syndrome

**borbelyova.veronika88@gmail.com**



**JANKA BÁBÍČKOVÁ**, MSc, PhD

CC/IF publications - 26, SCI citations - 179,  
h-index - 9

phage display, sex steroids,  
inflammatory bowel disease,  
extracellular DNA,  
experimental nephrology

**jana.babickova@gmail.com**



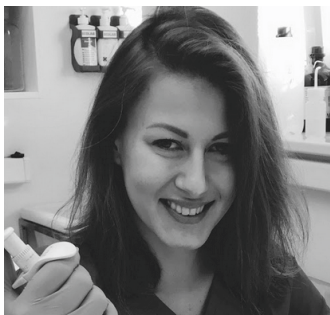
**ROMAN GARDLÍK**, MD, MSc, PhD

CC/IF publications - 60, SCI citations - 530,  
h-index - 13

inflammatory bowel disease, animal models,  
extracellular DNA, microbiome

**roman.gardlik@imbm.sk**





**BARBORA KONEČNÁ**, MSc, PhD

CC/IF publications - 12, SCI citations - 23,  
h-index - 3

extracellular DNA, extracellular vesicles,  
pregnancy complications,  
quantitative real-time PCR

**barbora.konecna@imbm.sk**



**MICHAL PASTOREK**, MSc, PhD

CC/IF publications - 16, SCI citations - 131,  
h-index - 7

arsenic nanoparticles and natural compounds  
in cancer treatment, molecular chaperones,  
p53 and apoptosis

**michal.pastorek@imbm.sk**



**EMESE RENCZÉS**, MSc, PhD

CC/IF publications - 11, SCI citations - 11,  
h-index - 2

sex hormones, rodent behavioral tests,  
mental disorders

**emese.domonkos@imbm.sk**



**MÁRIA SUCHOŇOVÁ**, MSc, PhD

CC/IF publications - 3, SCI citations - 8,  
h-index - 2

optics, optical spectroscopy, laser-induced  
breakdown spectroscopy, biomedical physics,  
imaging methods in medicine

**maria.suchonova@imbm.sk**



**ĽUBOMÍRA TÓTHOVÁ**, MSc, PhD

CC/IF publications - 57, SCI citations - 358 ,  
h-index - 13

salivary markers, oxidative stress, urinary tract  
infections, bacteriophages, microbiology

**lubomira.tothova@imbm.sk**



**BARBORA VLKOVÁ**, MSc, PhD

CC/IF publications - 36, SCI citations - 335,  
h-index - 10

extracellular DNA, non-invasive prenatal  
diagnostics, pneumonia, sepsis,  
molecular pathology

**barbora.vlkova@imbm.sk**

## PHD STUDENTS AT IMBM

Jozef Čonka, MSc

Melinda Csongová, MSc

Ľubica Janovičová, MSc

Júlia Illéssová, MD

Martin Marônek, MSc

Katarína Kmeťová, MSc

Nikola Pribulová, MSc

Jakub Janko, MSc

Lucia Mihalovičová, MSc

Miriám Pillerová, MSc

Veronika Šarayová, MSc

## PHD STUDENTS WHO SUCCESSFULLY DEFENDED THEIR THESES

Emese Renczés, MSc, PhD

Marianna Gyurászová, MSc, PhD

Alexandra Kovalčíková, MSc, PhD

Lucia Lauková, MSc, PhD

## MASTER STUDENTS WHO STUDIED AT IMBM

Alžbeta Holá, B.S.

Barbora Čechová, B.S.

Barbora Gromová, B.S.

Diana Drobná, B.S.

Marianna Hladová, B.S

Thomas Stehle

Tim Hoepfner

Manuel Steinhardt

## MASTER STUDENTS WHO SUCCESSFULLY DEFENDED THEIR THESES

Simona Molnárová, B.S.

Kristína Ploth, B.S.

Kristína Tomová

## BACHELOR STUDENTS WHO STUDIED AT IMBM

Veronika Zámečníková

Kristína Lichá

Daniel Truchan

Ema Laššová

## OTHER COLLEAGUES

Lenka Libáková

Ingrid Simonová

Mária Turoňová

Ľudmila Kašíková

Darina Mackovičová

Darina Skuráková

Simona Durzová



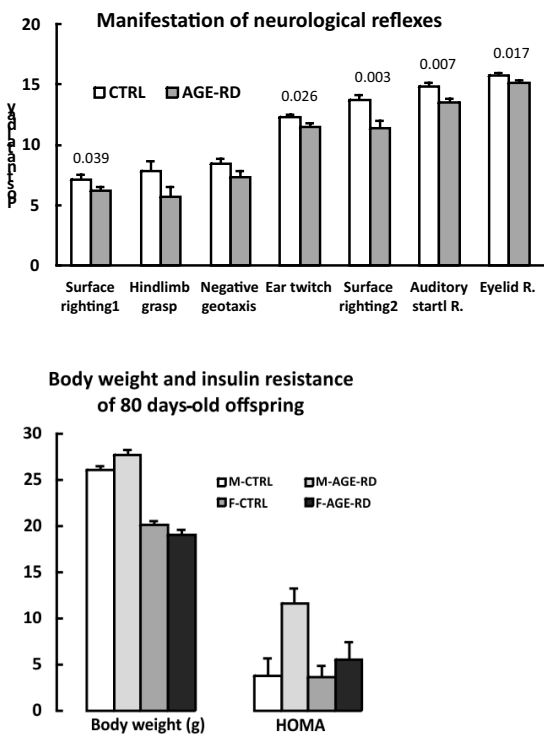
MATERNAL EXPOSURE TO ADVANCED GLYCATION END PRODUCTS-RICH DIET (AGE-RD) AFFECTS DEVELOPMENT AND METABOLISM OF MICE OFFSPRING

What is known?

Exposure to unhealthy diet during pregnancy might predispose the offspring to developmental alterations and later metabolic disturbances.

What is new?

Consumption of AGE-RD during pregnancy accelerates the maturation of physiological reflexes in offspring, and predispose the male progeny to weight gain and insulin resistance. These effects manifest in offspring consuming a standard diet.





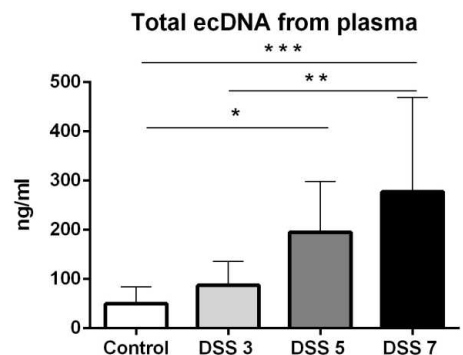
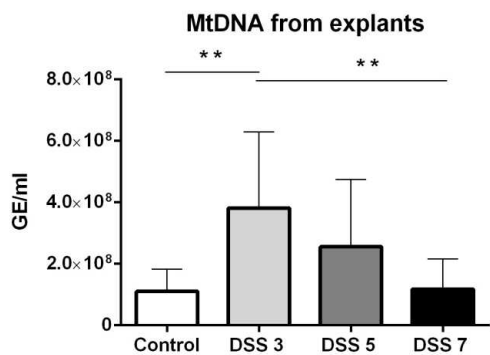
# DYNAMICS AND SOURCE OF EXTRACELLULAR DNA IN INFLAMMATORY BOWEL DISEASE

## What is known?

Extracellular DNA is increased in several inflammatory disorders and can be used as a marker of disease severity.

## What is new?

The concentration of plasmatic extracellular DNA correlates with the duration and severity of colitis and thus might play role in the systemic symptoms of disease. On the other hand, the levels of mitochondrial DNA originating directly from colonic tissue are increased in the initial stages of colitis and gradually decrease during the course of the disease. Such colon-derived DNA might be responsible for local - gastrointestinal manifestation of colitis



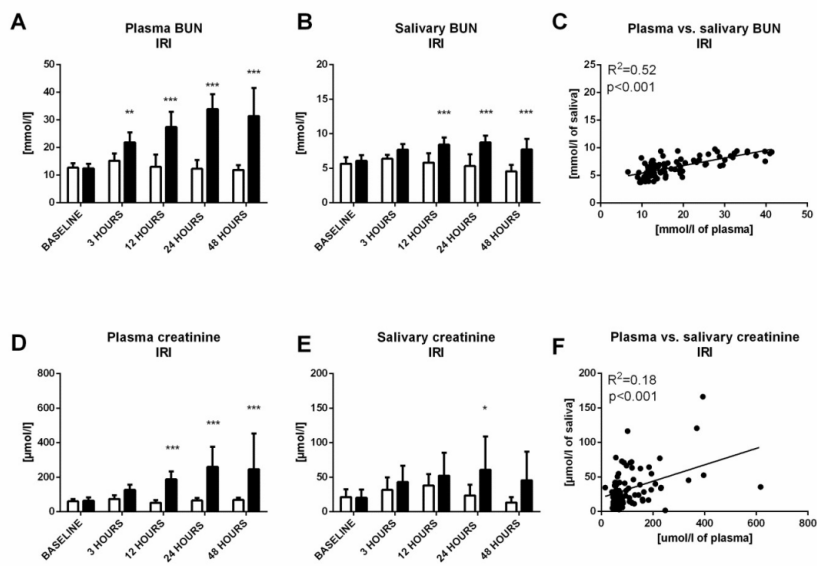
# DYNAMICS OF SALIVARY MARKERS OF KIDNEY FUNCTIONS

## What is known?

Saliva is gaining the popularity as an alternative fluid over the blood for the assessment of various diseases. Saliva plays role not only in monitoring of oral health, but provide the opportunity for monitoring of systemic health status as well. Several studies have shown increased salivary concentrations of urea and creatinine in individuals with acute and chronic kidney diseases when compared to healthy controls. Additionally, a positive correlation between serum/plasma and salivary creatinine and urea concentrations was confirmed.

## What is new?

Salivary urea and creatinine copy their plasma levels if an increase of plasma concentrations is adequate. Nevertheless, an increase of salivary markers is observed later compared to plasma. It seems that salivary markers of kidney functions urea and creatinine could serve as a non-invasive supplement of commonly used blood collection for monitoring of kidney disease progression (at least in higher stages of disease).



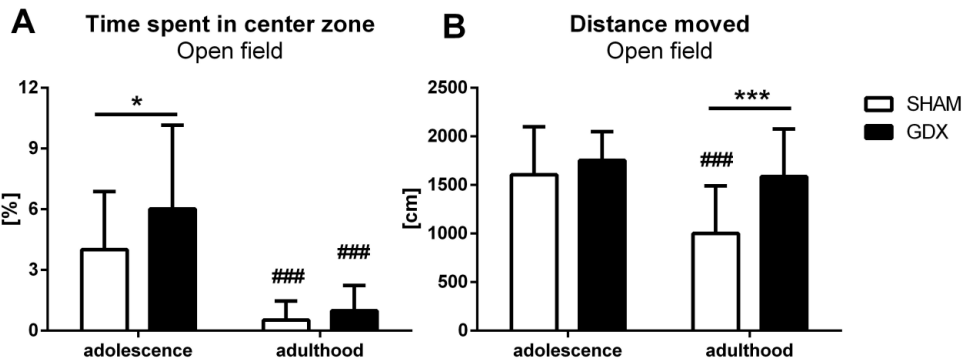
# THE EFFECTS OF PUBERTAL TESTOSTERONE IN DIFFERENT AGES

## What is known?

Besides the perinatal period, adolescence is also considered to be a critical period of sex hormone action (re)organizing the brain and determining the future behavioral phenotype. It has been suggested that sex differences in some behavioral features, such as anxiety and explorative behavior in novel environment, are attributable to the sex hormones released in puberty.

## What is new?

Our results indicate that the short- and long-term effects of pre-pubertal gonadectomy may differ, leading to decreased anxiety-like behavior or increased explorative behavior, respectively.



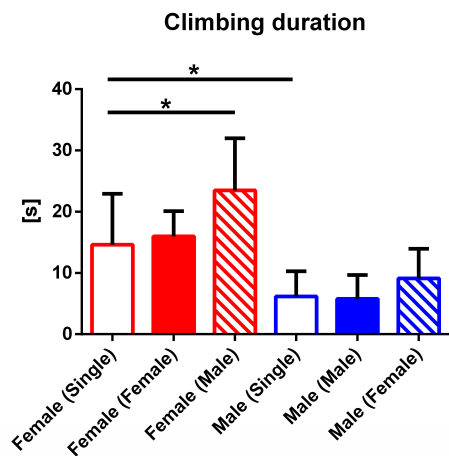
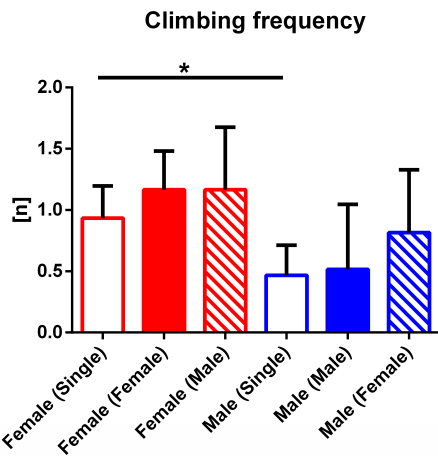
# HOME-CAGE GRID-CLIMBING ACTIVITY IN ADULT MICE

## What is known?

Mice housed in standard laboratory cages exhibit various spontaneous behavioral patterns including climbing on the cage lid. Experimental studies indicate that cage lid-related activities are either form of locomotor activity or an attempt to leave the home cage.

## What is new?

Climbing along the cage lid is a sex-specific behavior in mice, with a higher climbing activity in females. Additionally, in females, presence of a male social partner results in a higher climbing activity indicating a possible form of attracting the male.



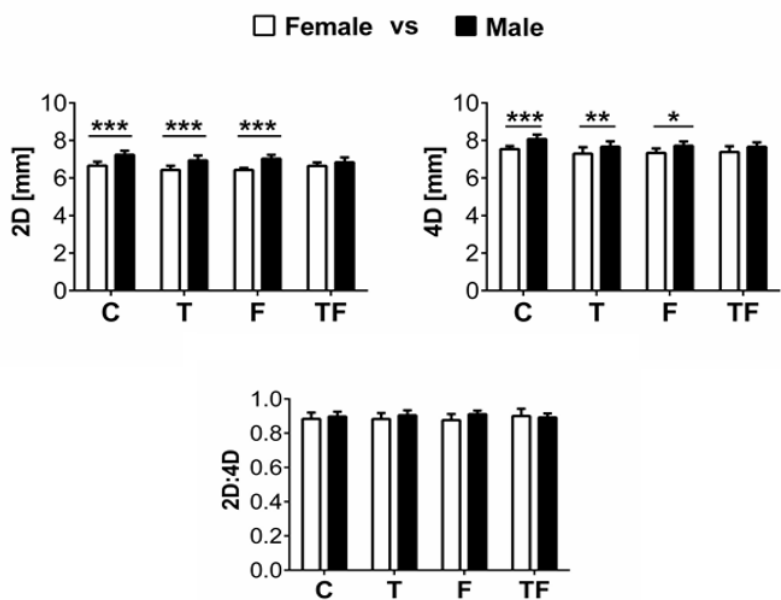
# DOES THE DIGIT RATIO (2D:4D) REFLECT THE PRENATAL ANDROGEN EXPOSURE?

## What is known?

In humans, the ratio of the second and fourth digit (2D:4D) reflects prenatal exposure to testosterone. Men have a relatively longer 4th digit, while women a longer 2nd digit, indicating higher 2D:4D ratio in women.

## What is new?

The results of our experimental study showed sex differences in lengths of 2D and 4D in rats, with females having shorter finger lengths than males. However, these differences were not affected by prenatal androgen exposure. Moreover, no effect of either endogenous or exogenous prenatal androgen exposure on 2D:4D ratio was observed.



C - Control, T - Testosterone, F - Flutamide, TF - Testosterone + Flutamide



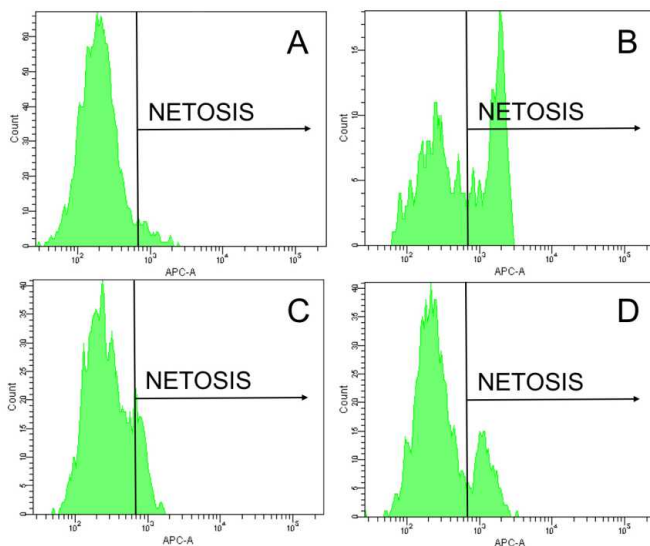
## MONITORING NEUTROPHIL ACTIVATION

### What is known?

Battling invading microbial pathogens, neutrophils employ strategies ranging from phagocytosis to degranulation to release of neutrophil extracellular traps (netosis). It remains to be elucidated, however, under what circumstances is the activation of neutrophils beneficial and when it results in damage to the host tissue.

### How can we move further?

We have established flow cytometry methods to identify neutrophils undergoing netosis in mice with sepsis or chemically induced colitis (1).



**(1)** Quantification of neutrophils undergoing netosis in control C57BL/6 mice (A) and mice treated with DSS alone (B) or in combination with DnaseI (C) or Neutrophil elastase inhibitor (D) characterized by positive staining for ecDNA binding dye. Application of DnaseI or Neutrophil elastase inhibitor was able to partially abrogate netosis induced by DSS treatment.

# IS THE DNA OF PLACENTAL ORIGIN PACKAGED IN EXOSOMES ISOLATED FROM PLASMA AND SERUM OF PREGNANT WOMEN?

## What is known?

Fetal DNA in the circulation of pregnant women has been already used as a marker of normal and complicated pregnancies in noninvasive prenatal diagnosis.

## What is new?

Fetal DNA is detected also in extracellular vesicles, specifically exosomes, isolated from serum and plasma of pregnant women. This finding could help to reveal the unknown pathogenesis of pregnancy complications, which seem to be associated with increased fetal DNA.

Table 1: Results of DNA analysis.

| Sample-fetal gender | Plasma   |          |          |          | Serum    |          |          |          |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|
|                     | exoDNA   |          | cfDNA    |          | exoDNA   |          | cfDNA    |          |
|                     | X-marker | Y-marker | X-marker | Y-marker | X-marker | Y-marker | X-marker | Y-marker |
| 1-XX                | 60.28    | N/A      | 1788.00  | N/A      | 479.74   | N/A      | 3275.44  | N/A      |
| 2-XX                | 107.04   | N/A      | 1317.25  | N/A      | 725.79   | N/A      | 7279.42  | N/A      |
| 3-XX                | 48.52    | N/A      | 617.83   | N/A      | 671.17   | N/A      | 8873.34  | N/A      |
| 4-XX                | 71.84    | N/A      | 665.75   | N/A      | 848.73   | N/A      | 10396.31 | N/A      |
| 5-XX                | 80.07    | N/A      | 263.51   | N/A      | 1008.80  | N/A      | 18218.74 | N/A      |
| 6-XY                | 89.24    | 0.72     | 693.43   | 17.69    | 384.35   | 0.41     | 6814.49  | 14.97    |
| 7-XY                | 70.93    | 0.82     | 630.55   | 19.87    | 353.12   | 0.92     | 1906.47  | 15.88    |
| 8-XY                | 60.28    | 0.96     | 583.18   | 21.18    | 805.59   | 1.64     | 13141.18 | 44.18    |
| 9-XY                | 23.52    | 1.90     | 189.57   | 11.84    | 723.43   | 0.47     | 13808.04 | 6.08     |
| 10-XY               | 167.83   | 3.90     | 824.51   | 24.34    | 673.36   | 1.25     | 11440.40 | 35.57    |
| Average             | 77.96    | 1.66     | 757.36   | 18.99    | 667.41   | 0.94     | 9515.38  | 23.33    |

Exosomes isolated from plasma and serum of pregnant women were treated with DNase I during sample processing. Later the DNA extracted from exosomes and also cell-free DNA isolated directly from maternal plasma and serum were analyzed using quantitative real-time PCR. In our samples, the DNA of maternal origin was detected in all samples. In samples of pregnant women carrying male fetuses, the DNA of fetal/placental DNA was detected by detection of the Y-chromosome-specific marker. In samples of pregnant women carrying female fetuses, the presence of signal corresponding to Y-chromosome specific marker was not detected (sensitivity and specificity = 100%). The values of DNA concentration detected in samples are presented in genome equivalents/mL (GEq/mL).

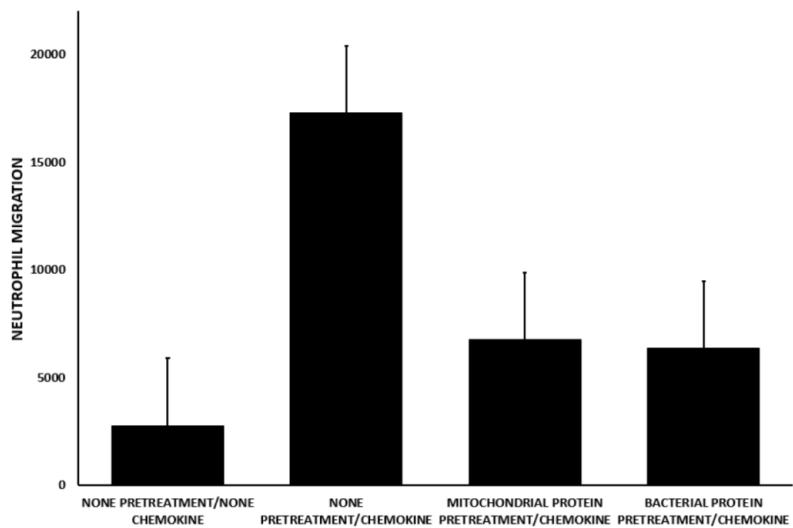
# DESENSITISATION OF NEUTROPHILS

## What is known?

Neutrophils are essential for host defence against bacterial infections. They are activated in the presence of chemokines, mitochondrial or bacterial proteins.

## What is new?

The chemotactic activity of neutrophils purified from the bone marrow of experimental animals to chemokine is inhibited after previous pretreatment with mitochondrial or bacterial proteins.



# RESISTANCE OF EXTRACELLULAR DNA TO DEOXYRIBONUCLEASES

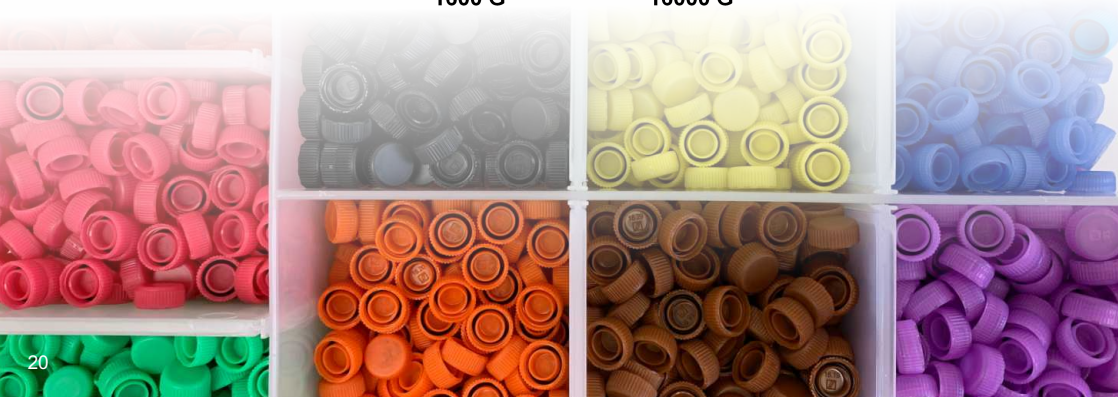
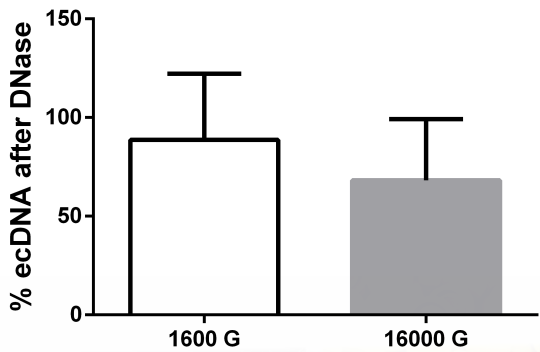
## What is known?

Many studies and animal experiments have shown that the activity of deoxyribonucleases can affect concentration of extracellular DNA in blood.

## What is new?

Most extracellular DNA of plasma can be removed by centrifugation at 16000g, alike most is resistant to deoxyribonucleases. Microvesicular members, histones or other DNA-binding proteins can protect extracellular DNA from deoxyribonucleases.

Plasma ecDNA



# CONFERENCES

An active participation in scientific conferences is an indispensable element for our work. At conferences we have the opportunity to present the results of our analyzes, to discuss with experts and to establish in new cooperation. In 2018 we participated in many scientific conferences.

## IN 2018, WE ACTIVELY ATTENDED THE FOLLOWING CONFERENCES:

### **94th PHYSIOLOGICAL DAYS, 06.-08.02.2018, Plzeň, Czech republic**

(Peter Celec, Barbora Vlková, Mária Suchoňová, Barbora Konečná, Diana Drobná, Barbora Gromová, Júlia Illés, Martin Marônek, Katarína Kmeťová, Ľubica Janovičová, Alexandra Gaal Kovalčíková, Emese Renczés)



### **CANCER RESEARCH DAY, 7.3.2018, Martin, Slovakia**

(Veronika Borbélyová)

### **GENETIC CONFERENCE, 15.-16.3.2018, Martin, Slovakia**

(Barbora Konečná, Júlia Illés)



**STUDENT SCIENTIFIC ACTIVITY, 18.4.2018, Faculty of Medicine, Comenius University, Bratislava, Slovakia**

(Róbert Lipták, Martin Marônek, Lucia Lauková, Ľubica Janovičová, Júlia Illés, Alexandra Gaál Kovalčíková, Emese Domonkos, Katarína Kmeťová, Jozef Čonka),



**DNA DAY SLOVAKIA, 21.-25.4.2018, Bratislava, Slovakia**  
(IMBM team, participation and organization)



**25th EUROPEAN CONGRESS ON OBESITY, 13.-16.5.2018, Vienna, Austria**  
(Katarína Šebeková)

**6th NEUROPSYCHIATRIC CONGRESS, 7.-9.6.2018, Bratislava, Slovakia**  
(Peter Celec, Emese Renczés, Veronika Borbélyová)

**40th INTERNATIONAL CONGRESS OF THE SOCIETY OF MICROBIAL ECOLOGY AND DISEASE SOMED, 18.-19.6.2018, Budapest, Hungary**  
(Roman Gardlík, Róbert Lipták)

**5th CENTRAL-EASTERN EUROPEAN CONGRESS ON CELL-FREE NUCLEIC ACID, 21.-22.6.2018, Debrecen, Hungary**  
(Peter Celec, Emese Renczés, Ľubica Janovičová, Lucia Krajčík Lauková)



**FALLING WALLS LAB SLOVAKIA, 10.9.2018, Bratislava, Slovakia**  
(Lucia Lauková, Marianna Gyurászová, Jozef Čonka, Alexandra Gaál-Kovalčíková)

**FALLING WALLS, 8.-9.11.2018, Berlin, Germany**  
(Lucia Lauková)

**GASTROENTEROLOGY DAY OF BRATISLAVA-RUŽINOV, 10.11.2018, Bratislava, Slovakia**  
(Peter Celec, Roman Gardlík, Jozef Čonka, Barbora Gromová, Kristína Tomová, Róbert Lipták and Július Hodosy)

# FOREIGN STAYS

## LUBOMÍRA TÓTHOVÁ

Washington University in St. Louis, School of Medicine  
Department of Pediatrics,  
Division of Infectious Diseases  
january-june 2018 working on sex-specific responses to therapeutic  
agents in urinary tract infections



## BARBORA VLKOVÁ

research fellow, april-october 2018,  
Beth Israel Deaconess Medical Center,  
Harvard Medical School, Boston, USA  
Surgery department - trauma, pneumonia



**HARVARD**  
MEDICAL SCHOOL

## PETER CELEC

visiting professor, july-august 2018,  
Beth Israel Deaconess Medical Center,  
Harvard Medical School, Boston, USA  
Surgery department



Beth Israel Deaconess  
Medical Center



# INVITED LECTURES

**Invited lecture is a kind of honor of the scientific work and effort. In 2018, researchers from IMBM were invited to several domestic and international scientific meetings and seminars to give talks focused on their own original results.**

**Šebeková K., Kebis A., Celec P.** - Effects of physical activity on metabolism in experimental animals. 58th Pediatric Days, 19.-20.4. 2018, Bratislava, Slovakia

**Celec P.** - Extracellular DNA in animal models of sepsis and hepatorenal injury. Surgery department Beth Israel Deaconess Medical Center, Harvard Medical School, 6.7.2018, Boston, USA

**Tóthová L.** - Diagnostic potential of saliva. Seminar for students attending Summer school (VIVALASCIENCE). Department of Animal Physiology, Slovak University of Agriculture, 27.8.2018, Nitra, Slovakia

**Hodosy J.** - Progress in behavioral analysis of experimental animals. Seminar for students attending Summer school (VIVALASCIENCE). Department of Animal Physiology, Slovak University of Agriculture, 27.8.2018, Nitra, Slovakia

**Konečná B.** - Extracellular DNA. Summer School (VIVALASCIENCE). Department of Animal Physiology, Slovak University of Agriculture, 27.8.2018, Nitra, Slovakia

**Čonka J.** - Summer School (VIVALASCIENCE). Department of Animal Physiology, Slovak University of Agriculture, 27.8.2018, Nitra, Slovakia

**Gardlík R., Celec P.** - Gene therapy: past, present and future. Genetic conference GSGM, 12.-14.9.2018, Bratislava, Slovakia

**Šebeková K.** - Physiological and pathophysiological effects of dietary advanced glycation end products and melanoidins. 8th International Scientific and Educational Symposium of Bioregenerative Medicine in Slovakia, 26.9.2018, Bratislava, Slovakia

**Šebeková K.** - Comparison of cardiometabolic risk evaluation in adolescents using the IDF classification criteria and the continuous metabolic syndrome score. XIII. Congress of Slovak Society of Clinical Biochemistry, 4-6.11.2018, Piešťany, Slovakia

**Gardlík R.** - Microbiome in gastroenterology. Seminar of the 1st Pediatric Department of the Faculty of Medicine, Comenius University, 14.12.2018, Bratislava, Slovakia

**Gardlík R.** - Gene therapy: principles, history and clinics. Seminar of the Department of Genetics, Faculty of Natural Sciences, Charles University, 28.11.2018, Prague, Czech Republic





# EDUCATION ACTIVITIES

**IMBM is a research institute, but it is also important to participate in educational process. Beyond institutional meetings, seminars and courses we prepared the lectures, seminars and practical courses at the Faculty of medicine and Faculty of natural sciences Comenius University.**

## **FACULTY OF MEDICINE:**

Physiology  
Pathophysiology  
Pathology  
Introduction to Science



## **FACULTY OF NATURAL SCIENCES:**

Molecular endocrinology  
Basics of theoretical and experimental medicine  
Animal physiology and ethology  
Progress in molecular biology  
Advanced methods in molecular biology  
Behavioral genetics  
Special genetics



## **OTHER LECTURES**

Faculty of Electrical Engineering and Information Technology  
State Veterinary and Food Administration of the Slovak Republic

# PRIZES

**Lucia Lauková, MSc, PhD** - Falling Walls Lab Slovakia

**Barbora Konečná, MSc, PhD** - Scholarship of Ľudmila Sedlárová - Rabanová

**Barbora Gromová, B.S.** - Scholarship of Ľudmila Sedlárová - Rabanová



**Barbora Gromová, B.S.** - SAIA scholarship for a research stay at Harvard

**Kristína Tomová** - Rector's award

**Róbert Lipták** - Best poster at the Congress of the Society for Microbial Ecology and Diseases

**Róbert Lipták** - 1st place at Student Scientific Activity Conference

**Lucia Lauková, MSc, PhD** - 1st place at Student Scientific Activity Conference

**Ľubica Janovičová, MSc** - 2nd place at Student Scientific Activity Conference

**Alexandra Gaál-Kovalčíková, MSc, PhD** - 3rd place at Student Scientific Activity

# COOPERATIONS

2nd Department of Oncology, Faculty of Medicine, Comenius University and Translational Research Unit, National Cancer Institute, Bratislava, Slovakia  
(Michal Mego, prof., MD, PhD)

Department of Dental Hygiene, Faculty of Health Care, University Prešov, Slovakia  
(Eva Kovaľová, assoc. prof., MD, PhD)

1st Department of Internal Medicine, Faculty of Medicine, Comenius University, Bratislava, Slovakia  
(Emoke Šteňová, assoc. prof., MD, PhD)

National Institute of Rheumatic Diseases, Piešťany, Slovakia  
(Vanda Mlynáriková, MD)

2nd Gynecology and obstetrics clinic, Faculty of Medicine, Comenius University, Bratislava, Slovakia  
(Jozef Záhumenský, assoc. prof., MD, PhD)

Department of Obstetrics and Gynecology, Sahlgrenska University Hospital/Ostra, Gothenburg, Sweden  
(Bo Jacobsson, prof., MD, PhD)

Department of Clinical Microbiology, Karolinska University Hospital, Stockholm, Sweden  
(Milan Chromek, MD, PhD)

Department of Obstetrics and Gynaecology, University Hospital Hradec Kralove, Charles University, Hradec Kralove, Czech Republic  
(Marian Kacerovský, assoc. prof., MD, PhD)

Department of Pathological Physiology, Faculty of medicine, Masaryk University, Brno, Czech Republic  
(Kateřina Kaňková, prof., MD, PhD)

Institute of Clinical Biochemistry and Laboratory Diagnostics, Charles University, Prague, Czech republic  
(Marta Kalousová, prof., MD, PhD)

1st Department of Obstetrics and Gynecology, Semmelweis University, Budapest, Hungary  
(Bálint Nagy, prof., PhD)

Department of Pharmacodynamics, Semmelweis University, Budapest, Hungary  
(Eva Szökő, prof., MSc, PhD)

Neuromorphological and Neuroendocrine Research Laboratory of the Semmelweis University and the Hungarian Academy of Sciences, Budapest, Hungary  
(prof. Miklós Palkovits)

Department of Haemostasis and Haemostatic Disorders, Medical University of Lodz, Lodz, Poland  
(prof. Cezary Watala)

Department of Internal Medicine, University of Würzburg and KfH Kidney Center, Würzburg, Germany  
(prof. August Heidland)

Department of Nutritional and Physiological Chemistry, University of Vienna, Vienna, Austria  
(prof. Veronika Somoza)

Department of Neurology, NYU Langone Medical Center, New York, USA  
(Henrieta Scholtzova, MD, PhD)

University of Queensland, Australia  
(Mária Džunková, MSc, PhD)

Department of Physiology, First Faculty of Medicine, Charles University, Prague, Czech Republic  
(Vladimír Ríljak, assoc. prof., MD, PhD; Jaromír Mysliveček, prof., MD, PhD)



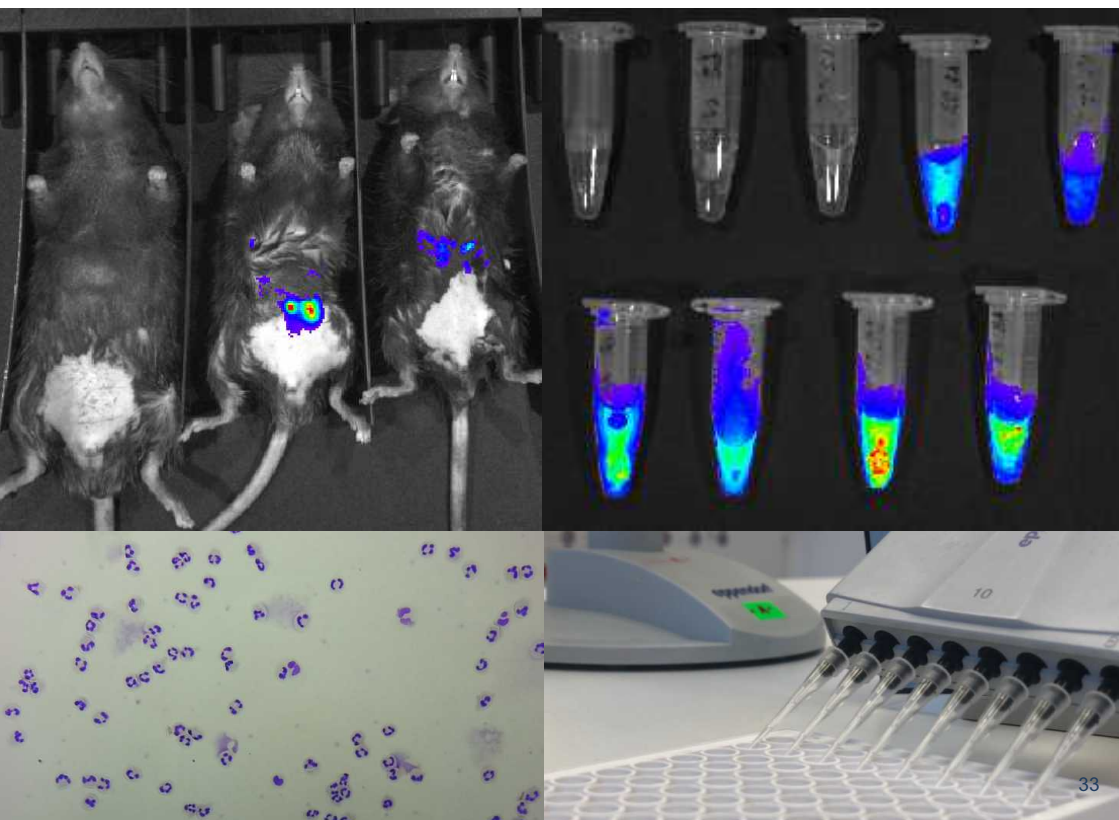
# PUBLICATIONS

1. Konečná B, Sysák R, Kacerovský M, Celec P, Vlková B: Deoxyribonuclease activity in plasma of pregnant women and experimental animals. *J Matern Fetal Neonatal Med*, 31(13):1807-1809, 2018
2. Tóthová L, Celec P: Oxidative Stress and Antioxidants in the Diagnosis and Therapy of Periodontitis. *Front Physiol*, 8:1055, 2017
3. Khan N, Lambert-Messerlian G, Monteiro JF, Hodosy J, Tóthová L, Celec P, Eklund E, Curran P, Bourjeily G: Oxidative and carbonyl stress in pregnant women with obstructive sleep apnea. *Sleep Breath*, 22(1):233-240, 2018
4. Borbélyová V, Domonkos E, Csongová M, Kačmárová M, Ostatníková D, Celec P, Hodosy J: Sex-dependent effects of letrozole on anxiety in middle-aged rats. *Clin Exp Pharmacol Physiol*, 44 Suppl 1:93-98, 2017
5. Celec P, Vlková B, Lauková L, Bábíčková J, Boor P: Cell-free DNA: The role in pathophysiology and as a biomarker in kidney diseases. *Expert Reviews in Molecular Medicine*, 20, e1. 2018
6. Csongová M, Gurecká R, Koborová I, Celec P, Domonkos E, Uličná O, Somoza V, Šebeková K: The effects of a maternal advanced glycation end product-rich diet on somatic features, reflex ontogeny and metabolic parameters of offspring mice. *Food Funct*. 9(6):3432-3446, 2018
7. Bábíčková J, Čonka J, Janovičová L, Boriš M, Konečná B, Gardlík R: Extracellular DNA as a Prognostic and Therapeutic Target in Mouse Colitis under DNase I Treatment. *Folia Biol (Praha)*, 64(1):10-15, 2018
8. Lauková L, Konečná B, Vlková B, Mlynáriková V, Celec P, Šteňová E: Anti-cytokine therapy and plasma DNA in patients with rheumatoid arthritis. *Rheumatol Int*. 38(8):1449-1454, 2018
9. Konečná B, Lauková L, Vlková B: Immune activation by nucleic acids: A role in pregnancy complications. *Scand J Immunol*. 87(4):e12651, 2018
10. Repiská G, Konečná B, Shelke GV, Lässer C, Vlková B, Minárik G: Is the DNA of placental origin packaged in exosomes isolated from plasma and serum of pregnant women? *Clin Chem Lab Med*. 24;56(6):e150-e153, 2018
11. Šebeková K, Csongová M, Gurecká R, Krivošíková Z, Šebek J: Gender Differences in Cardiometabolic Risk Factors in Metabolically Healthy Normal Weight Adults with Central Obesity. *Exp Clin Endocrinol Diabetes*. 126(5):309-315, 2018

12. Tichá Ľ, Regecová V, Šebeková K, Sedláková D, Hamade J, Podracká Ľ: Prevalence of overweight/obesity among 7-year-old children—WHO Childhood Obesity Surveillance Initiative in Slovakia, trends and differences between selected European countries. *Eur J Pediatr*. 177(6): 945–953, 2018
13. Kovalčíková A, Gyurászová M, Vavrinčová -Yaghi D, Vavrinec P, Tóthová Ľ, Boor P, Šebeková K, Celec P: Oxidative stress in the brain caused by acute kidney injury. *Metabol Brain Dis* 33(3):961-967, 2018
14. Kovalčíková A, Janšáková K, Gyurászová M, Podracká Ľ, Šebeková K, Celec P, Tóthová Ľ: Salivary creatinine and urea are higher in an experimental model of acute but not chronic renal disease. *PLoS ONE*. 13(7): e0200391, 2018
15. Baka T, Hodosy J, Krajcirovicova K, Repova K, Aziriova S, Domonkos E, Borbelyova V, Slavkovsky P, Zorad S, Celec P, Paulis L, Simko F: 17 $\beta$ -Estradiol treatment reversed left ventricular dysfunction in castrated male rats: an echocardiographic study. *Can J Physiol Pharmacol*. 96(8):850-854, 2018
16. Domonkos E, Hodosy J, Ostatníková D, Celec P: On the role of testosterone in anxiety-like behavior across life in experimental rodents. *Front Endocrinol*. 9: 441, 2018
17. Repova K, Krajcirovicova K, Mullerova M, Aziriova S, Baka T, Zorad S, Slavkovsky P, Hodosy J, Celec P, Adamcova M, Paulis L, Simko F: Effect of melatonin on the behaviour of rats with continuous light-induced hypertension. *General Physiology and Biophysics*, 37(4):469-473, 2018
18. Kalavska K, Minarik T, Vlkova B, Manasova D, Kubickova M, Jurik A, Mardiak J, Sufliarsky J, Celec P, Mego M: Prognostic value of various subtypes of extracellular DNA in ovarian cancer patients. *Journal of Ovarian Research*, 11(1):85, 2018
19. Liptak R, Gromova B, Maronek M, Gardlik R: Reverse phenotype transfer via fecal microbial transplantation in inflammatory bowel disease. *Medical Hypotheses*, 122:41-44, 2019
20. Gyuraszova M, Kovalcikova A, Babickova J, Hodosy J, Tothova L: Cell-free nucleic acids in urine as potential biomarkers of kidney disease. *Journal of Applied Biomedicine*, 16:157-164, 2018
21. Kacerovsky M, Vlkova B, Musilova I, Andrys C, Pliskova L, Zemlickova H, Stranik J, Halada P, Jacobsson B, Celec P: Amniotic fluid cell-free DNA in preterm prelabor rupture of membranes. *Prenat Diagn*, 38(13): 1086-1095, 2018
22. Koborová I, Gurecká R, Csongová M, Šebek J, Šebeková K: Plasma markers of oxidative status were associated with increasing continuous cardiometabolic risk scores in healthy students aged 16-20 years without central obesity. *Acta Paediatr*, 107(12): 2137-45, 2018



23. Šebeková K, Šebek J: Continuous metabolic syndrome score (siMS) enables quantification of severity of cardiometabolic affliction in individuals not presenting with metabolic syndrome. *Bratisl Med J*, 119 (11): 675-678, 2018
24. Csongová M, Volkovová K, Gajdoš M, Gurecká R, Koborová I, Lišková A, Šebeková K: Gender-associated differences in the prevalence of central obesity using waist circumference and waist-to-height ratio, and that of general obesity in Slovak adults. *Cent Eur J Public Health*, 26 (3): 228-233, 2018
25. Gyurászová M, Kovalčíková A, Janšáková K, Šebeková K, Celec P, Tóthová L: Markers of oxidative stress and antioxidant status in the plasma, urine and saliva of healthy mice. *Physiol Res*, 67: 921-934, 2018
26. Džunková M, Martinez-Martinez D, Gardlík R, Behuliak M, Janšáková K, Jiménez N, Vázquez-Castellanos JF, Martí JM, D'Auria G, Bandara HMHN, Latorre A, Celec P, Moya A: Oxidative stress in the oral cavity is driven by individual-specific bacterial communities. *NPJ Biofilms Microbiomes*, 4:29, 2018



# GRANT PROJECTS

## **APVV GRANTS**

### **APVV-16-0273**

DEOXYRIBONUCLEASE ACTIVITY IN PLASMA AND ITS IMPORTANCE IN CLEARANCE OF EXTRACELLULAR DNA

Peter Celec  
2017-2019

### **APVV-17-0505**

BIOLOGICAL ASPECTS OF EXTRACELLULAR NUCLEIC ACIDS IN COLONIC INFLAMMATION

Roman Gardlík  
2018-2021

## **KEGA GRANT**

### **KEGA 032UK-4/2018**

PRACTICAL BIOMEDICAL RESEARCH COURSES FOR PHD STUDENTS

Peter Celec  
2017-2019

## **VEGA GRANTS**

### **VEGA 1/0062/16**

EFFECTS OF PRENATAL EXPOSURE TO UNHEALTHY DIET ON EARLY NEUROMOTORIC DEVELOPMENT AND LATER METABOLIC STATUS IN RAT OFFSPRING

Katarína Šebeková  
2016-2018

### **VEGA1/0092/17**

EXTRACELLULAR DNA AND ITS IMPORTANCE IN THE PATHOGENESIS OF RENAL AND METABOLIC COMPLICATIONS OF VARIOUS DISEASES

Peter Celec  
2017-2019

### **VEGA1/0156/17**

THE ROLE OF NETOSIS IN THE PATHOGENESIS OF PREECLAMPSIA

Barbora Vlková  
2017-2019

**VEGA 1/0204/17**

THE ROLE OF EXTRACELLULAR DNA IN PATHOGENESIS AND THERAPY OF  
INFLAMMATORY BOWEL DISEASE

Roman Gardlík

2017-2019

**VEGA 1/0234/18**

MOLECULAR MECHANISMS BEHIND THE ANTIMICROBIAL EFFECTS OF STEROIDS ON  
UROPATHOGENIC BACTERIA

Ľubomíra Tóthová

2018-2020

**COMENIUS UNIVERSITY GRANTS****UK/363/2018**

THE METABOLIC EFFECT OF LONG-TERM INTAKE OF COLA DRINKS

Jozef Čonka

**UK/360/2018**

THE ACUTE EFFECT OF CAFFEINE ON ANXIETY-DEPRESSIVE BEHAVIOR AND GLUCOSE  
METABOLISM

Katarína Kmeťová

**UK/269/2018**

DYNAMICS OF EXTRACELLULAR DNA IN THE ANIMAL MODEL OF SEPSIS

Lucia Lauková

**UK/218/2018**

DYNAMICS OF EXTRACELLULAR DNA IN A MODEL OF CHEMICALLY INDUCED COLITIS IN  
MICE

Martin Marônek

**UK/292/2018**

SEX DIFFERENCES AND THE EFFECT OF LONG-TERM HYPOGONADISM ON KIDNEY  
FUNCTION IN MALE RATS

Emese Renczés

# WHERE TO FIND US?

## **FACULTY OF MEDICINE COMENIUS UNIVERSITY**

5th floor

**SASINKOVA 4  
BRATISLAVA  
811 08  
SLOVAK REPUBLIC**



## **FACULTY OF MEDICINE COMENIUS UNIVERSITY PAVILION OF MEDICAL SCIENCES SLOVAK ACADEMY OF SCIENCES**

6th floor

**DÚBRAVSKÁ CESTA 9  
BRATISLAVA  
845 05  
SLOVAK REPUBLIC**

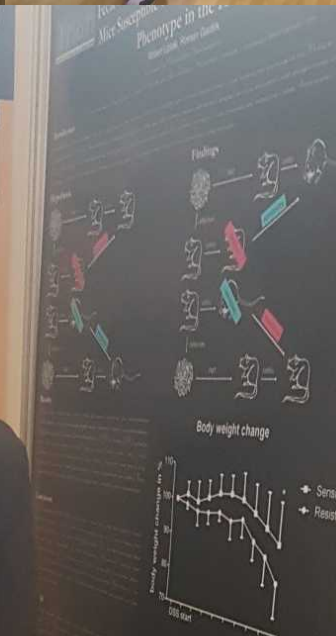


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**Content: Peter Celec**  
**Graphic design: Atelier Inak**