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NETPHARM

*New Technologies for Translational
Research in Pharmaceutical Sciences*

NETPHARM project

New Technologies for Translational Research in Pharmaceutical Sciences

Project No.: CZ.02.01.01/00/22_008/0004607

Operation Programme Johannes Amos Comenius, Priority 1 - Research and development, Specific target 1.1 Development and strengthening of research and innovation capacities and implementation of advanced technologies

OP RDE call No.: **02_22_008 Excellent Research**

Project budget: 495 479 168,91 CZK (approx. EUR 20,015 million)

Funded by: Ministry of Education, Youth and Sports (MEYS)

Project implementation: **March 1, 2024 – February 29, 2028**

Principal Investigator:

Prof. Petr Pávek, Faculty of Pharmacy, Charles University, Czech Republic



Project annotation:

The project synergistically **links major basic and translational research institutions and multidisciplinary teams using modern pharmaceutical science approaches with strong application potential**. The aim of the project is excellent research and development of advanced therapeutics, (nano)formulations and drug delivery systems, using innovative technologies, the latest approaches and experimental models of translational drug development within the network of excellent R&D centres (CU, UCT, CEITEC/MU, IOCB and IMC CAS CZ).

NETPHARM R&D centre in Czech Republic:

- Faculty of Pharmacy in Hradec Králové, (FoP CU), Faculty of Medicine in Hradec Králové (FoM HK)
- University of Chemistry and Technology, Prague (UCT)
- Central European Institute of Technology Masaryk university (CEITEC)
- Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences, Czech Republic (IOCB CAS CZ)
- Institute of Macromolecular Chemistry, Czech Academy of Sciences, Czech Republic (IMC CAS CZ)

5 Working Packages



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WP1 Pharmaceutical and analytical chemistry

Principal research team manager: **Prof. Kateřina Vávrová**, approx. **56 members**

Research interest: Research in organic, computational, physical and analytical chemistry in identifying new drugs.



WP2 Pharmacology and toxicology

Principal research team manager: **Prof. František Štaud**, approx. **35 members**

Research interest: Innovative experimental research investigating pharmacodynamic/pharmacokinetic properties of successful drug candidates (derived from WP1). WP2 will search, define and validate novel drug target proteins (receptors, enzymes, transporters, ion channels, etc) and will investigate pharmacological properties and drug-drug interactions of new medications.



WP3 Novel drug delivery systems and formulations

Principal research team manager: **Doc. Martin Hrubý**, approx. **42 members**

Research interest: Development of cutting-edge advanced nanoformulations and targeted (nano)delivery systems.



WP4 Geriatric clinical pharmacy and new technologies for individualization of drug schemes in older patients

Principal research team manager: **Doc. Daniela Fialová**, approx. **17 members**.

Research interest: WP4 plans to investigate, test and summarize **novel recommendations for better individualization of drug regimens in older patients with respect to various stages of geriatric frailty and cardio-hepato-renal syndrome**. These principles and recommendations will be developed for acute and ambulatory care and transformed into IT algorithms and e-health software technology supporting applicability of research outputs in e-healthcare. Novel recommendations will be published also as interdisciplinary clinical guideline.



WP5 Advanced in vitro and in silico approaches in drug development

Principal research team manager: **dr. Tomáš Smutný**, approx. **22 members**.

Research interest: The aim of the WP5 is to use advanced and up-to-date in vitro and in silico approaches to support the development of advanced therapies in other work packages WP1, WP2 and WP3.

Previous international projects

Research group „Ageing, Polypharmacy and Changes in the Therapeutic Value of Drugs in the Aged“



EU ADHOC project „AgeD in Home Care“, 2001-2005, 5th FP EC, representatives samples of seniors in capital cities, 11 EU countries (N= 4010, IT, CZ, NL, FIN, SP, FR, UK, NO, DEN, GER, SW), analyses of rational geriatric pharmacotherapy in 8 countries (N=2707 - IT, CZ, NL, FIN, FR, UK, NO, DEN)



EU SHELTER project „Services and Health in the Elderly in Long-Term Care“, 2009-2014, 7th FP EC, 57 LTCFs in 7 EU countries and Israel (N= 4156, IT, CZ, FIN, UK, GER, NL, ISR), analyses of rational geriatric pharmacotherapy



EU PREDICT project „Participation of elderly in clinical trials“, 2009-2014, coordinator: UK, participation of older patients in RCTs ad CTs- barriers and facilitators



EU COST Action project „Ageism- interdisciplinary, multiprofessional perspective“, WG1b „Healthy clinical strategies for healthy ageing“, 2015-2018, 20 EU countries (koordinátor: ISR), research works in reducing inappropriate prescribing in older patients, aspects of ageism in medication use



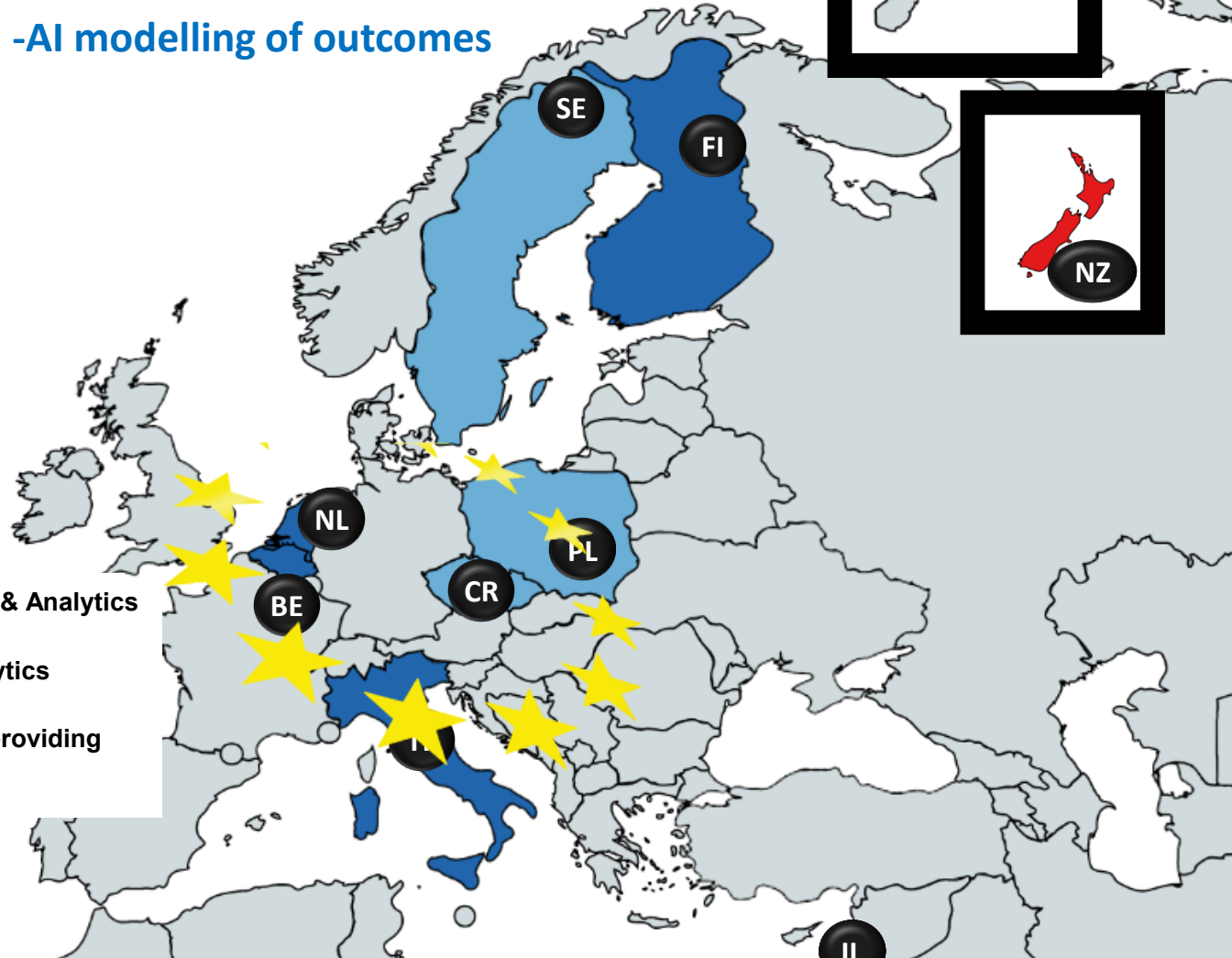
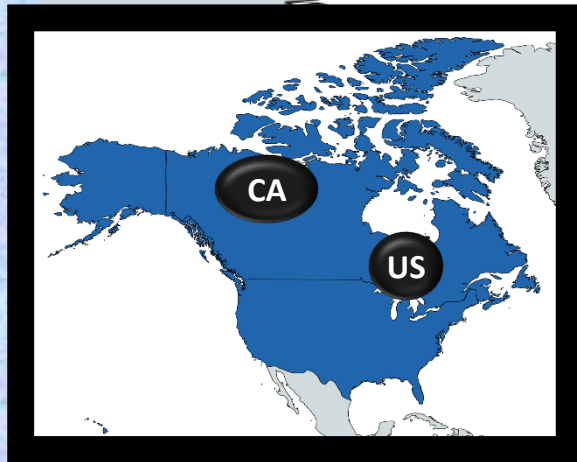
EuroAgeism Horizon 2020 project (CZ, BUL, CRO. RS, EST, SP, TUR + IND, ETH) „Inappropriate prescribing and availability of medication safety and medication management services in older adults in Europe and other countries“ (ESR7, 2017-2022, EU consorcium - ISR. UK, PL, CZ, SW, FIN), availability and use of PIMs in Central and Eastern Europe



I-CARE4OLD H2020 projekt (2021-2025)



- data of 50 millions of seniors – LTCF, HC
- impact of pharmacological and non-pharmacological interventions in complex older adults
- AI modelling of outcomes



Advisory boards

- Stakeholders
- Research & Safety

- Participants: Data & Analytics
- Participants: Analytics
- Non-participants providing data



WP 4 - NETPHARM

**Geriatric clinical pharmacy
and new technologies for the individualization
of drug schemes in older patients**

*Faculty of Pharmacy in Hradec Králové, Charles University
Department of Social and Clinical Pharmacy*



WP4 NETPHARM

Main research aims



WP4 NETPHARM

Secondary aims

- **Describe new principles of the individualization of drug schemes in older adults in acute and ambulatory care with respect to**
 - stages of geriatric frailty
 - stages of cardio-hepato-renal syndrome
- **Transform recommendations into SW algorithms and e-health technology applicable in the health-care system**
- **Publish expert articles (25 in total and 15 in Q1 journals)**
- **Publication of interdisciplinary clinical guidelines**

- **Support interdisciplinary cooperation of clinical pharmacists, geriatricians and nephrologists in the Czech Rep.**
- **Increase international cooperation of FoP CUNI team with foreign experts and increase collaboration with European/international professional societies**
- **Help in creation of clinical pharmacy research centres in acute and ambulatory care involving research collaboration with other healthcare professionals**

Timelines of WP4 NETPHARM research

Activity 1 (2024- 2025)

Systematic and scoping literature reviews

- individualization of drug schemes with respect to stages of geriatric frailty and cardio-hepato-renal syndrome



Milestone -1 (08/2025)

Summary of clinical recommendations

Activity 2 (2026-2027)

Cross-sectional multicentric CZ study

- validation of recommendations, 3 collaborating regionally different centres in acute care and 3 in ambulatory care (3x130 + 3x130 of older patients 65+), cooperation of clinical pharmacists, geriatricians and experts in cardio-renal-hepatic syndrome



involvement
of practical study sites

Milestone-2 (02/2027) Data qualitative and quantitative analyses

Milestone-3 (06/2027) Delphi international expert panel

Timelines of WP4 NETPHARM research

Activities 3-4 (2027-2028)

Development of e-health technology
Development of interdisciplinary international guidelines



Milestone -4 (02/2028)

Developed e-health SW
Translated interdisciplinary recommendations approved by Delphi panel

WP4: CZ core NEPHARM WP4 team



**Assoc. Prof.
Daniela Fialová**
WP4 chair
FoP CUNI

*Geriatric clinical pharmacy
Geriatric
pharmacoeconomics
Individualization of drug
schemes in older patients*



Prof. Eva Topinková
WP4 Key expert
FoP and 1st FoM
CUNI

*Geriatrics and gerontology
Geriatric frailty
Geriatric assessment*



**Prof. Sylvia Dusilová-
Sulková**
WP4 key expert
FoP and FoM HK CUNI

*Nephrology
Cardio-hepato-renal syndrom
Drug-related nephrotoxicity*



**Milada
Halačová, PharmD,
Ph.D**
Postdoc FoP CUNI
Na Homolce Hospital,
Prague
*Clinical pharmacy
Acute and
intensive care
Drug risks*



**RNDr. Jindra
Reissigová, Ph.D**
Postdoc FoP CUNI
Academy of Science,
Dept of
stat.modelling

*Statistical modelling
AI methods*



**PharmDr. Eliška
Dvořáčková Ph.D**
Postdoc FoP CUNI
Na Františku
Hospital

*Clinical pharmacy in
nephrology
Cardio-renal.hepatic
syndrom*



**PharmDr. Jitka
Pokladníková, Ph.D.**
Assist. Prof. FoP CUNI

*Integrative Medicine
Quality of life
Nonpharmacol. Interv.
Holistic medicine*

clinical researchers from acute and ambulatory care (clinical pharmacists, nephrologists, geriatricians- 2nd year of the project), + 4 CZ postdocs a 2 foreign postdocs, 8 postgraduate students and 8 diploma theses students

WP4: Key foreign experts



Prof. Graziano Onder
Universita Cattolica del Sacro Cuore, Italy
European Union of Geriatric Medicine
Society

Geriatrics and gerontology
Epidemiology and pharmacoepidemiology
Rational geriatric pharmacotherapy



Prof. Stephen Byrne
University College Cork, Ireland
European Society of Clinical Pharmacy

Clinical Pharmacy
Geriatric drug safety
Inappropriate geriatric prescribing
Medication Deprescribing and
Represcribing



Prof. Lisa Pont
University Technology of Sydney, Australia
International Society
of Pharmacoepidemiology

Drug safety
Pharmacopidemiology
e-health technologies, e-HC systems

Thank you for your attention

The project **New Technologies for Translational Research in Pharmaceutical Sciences /NETPHARM**, project ID **CZ.02.01.01/00/22_008/0004607**, is co-funded by the European Union.



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Lectures of foreign experts



12:15- 12:30

„Past challenging projects and current hot topics of the European geriatric research“ - lecture for the WP4 of the NETPHARM project and the EUGMS - European Union of Geriatric Medicine Society

prof. Graziano Onder, Universita Catolica del Sacro Cuore, Italy



12:30- 12:45

„Challenges of the ISPE - International Society of Pharmacoepidemiology in research in rational geriatric pharmacotherapy and e-health technologies“ - lecture for the WP4 of the NETPHARM project and the ISPE - International Society of Pharmacoepidemiology

prof. Lisa Pont, University Technology Sydney, Australia



12:45- 13:00

„Geriatric Deprescribing and initiatives of SIG ESCP - Special Interest Group of the European Society of Clinical Pharmacy on Deprescribing“ - lecture for the WP4 of the NETPHARM project and SIG ESCP on Deprescribing

prof. Stephen Byrne, University College Cork, Ireland