BIOMEDREG

INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Introduction to BIOMEDREG Project as a Research Platform for Molecular and Translational Medicine: from Discovery to Clinical Trials and Use

Marian Hajduch, MD, PhD

Laboratory of Experimental Medicine,
Institute of Molecular and Translational Medicine,
Faculty of Medicine and Dentistry,
Palacky University in Olomouc
Czech Republic

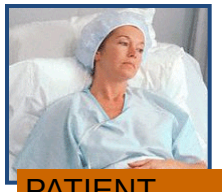
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
INVESTING IN YOUR FUTURE

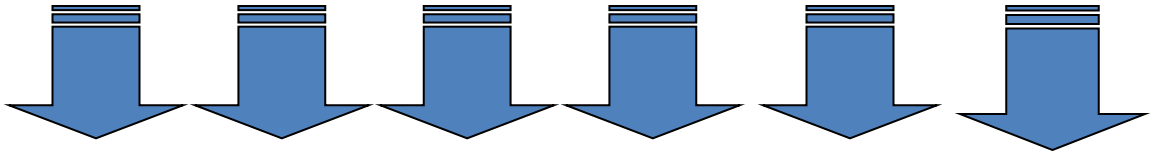
2007–13
OP Research and Development for Innovation

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

TRANSLATIONAL RESEARCH IN MEDICINE

- Recognizing patients needs in clinical practice (BED)
- Ability to perform basic and applied research (TO BENCH)
- Validation of results in clinical samples or phase I trials (BACK TO BED)
- Intellectual protection and commercionalization
- Phase I-III clinical trials (BACK TO BED AGAIN)





INDUSTRIAL/COMMERCIAL APPLICATIONS

IMPROVED SURVIVAL & QUALITY OF LIVE

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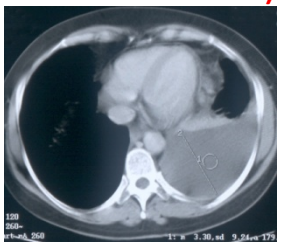
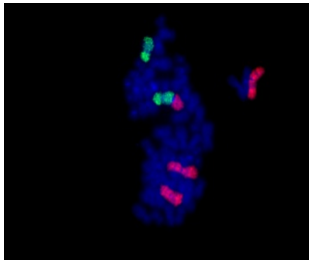
Major Determinants of Therapeutic Outcome

ANATOMIC STAGE OF DISEASE (DIAGNOSTICS - IMAGING)

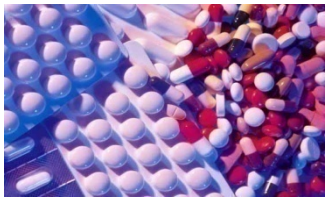


TUMOR BIOLOGY (BIOMARKERS & MOLECULAR TARGETS)



THERAPEUTIC OUTCOME

THERAPIES (SMALL MOLECULES, BIOLOGICS, ATMPs)



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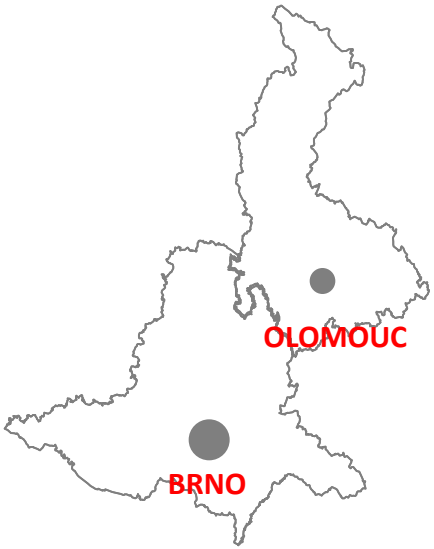
Palacký University in Olomouc

- Established in 1573
- The second oldest university after the Charles Universty in Prague
- Olomouc Archibishop – center of Moravian religion and education – alumni or region associated scientists: John Amos Comenius, Vincenz Priessnitz, **Johann Gregor Mendel**, Sigmund Freund, **Konrad Zirm**, Otto Wichterle, Frantisek Santavy, **Jiri Bartek**
- Currently 23.000 students, approx. 7% of Czech university students and 2.800 employees
- Strong language education, including Chinese and Japanese, Confucius Institute



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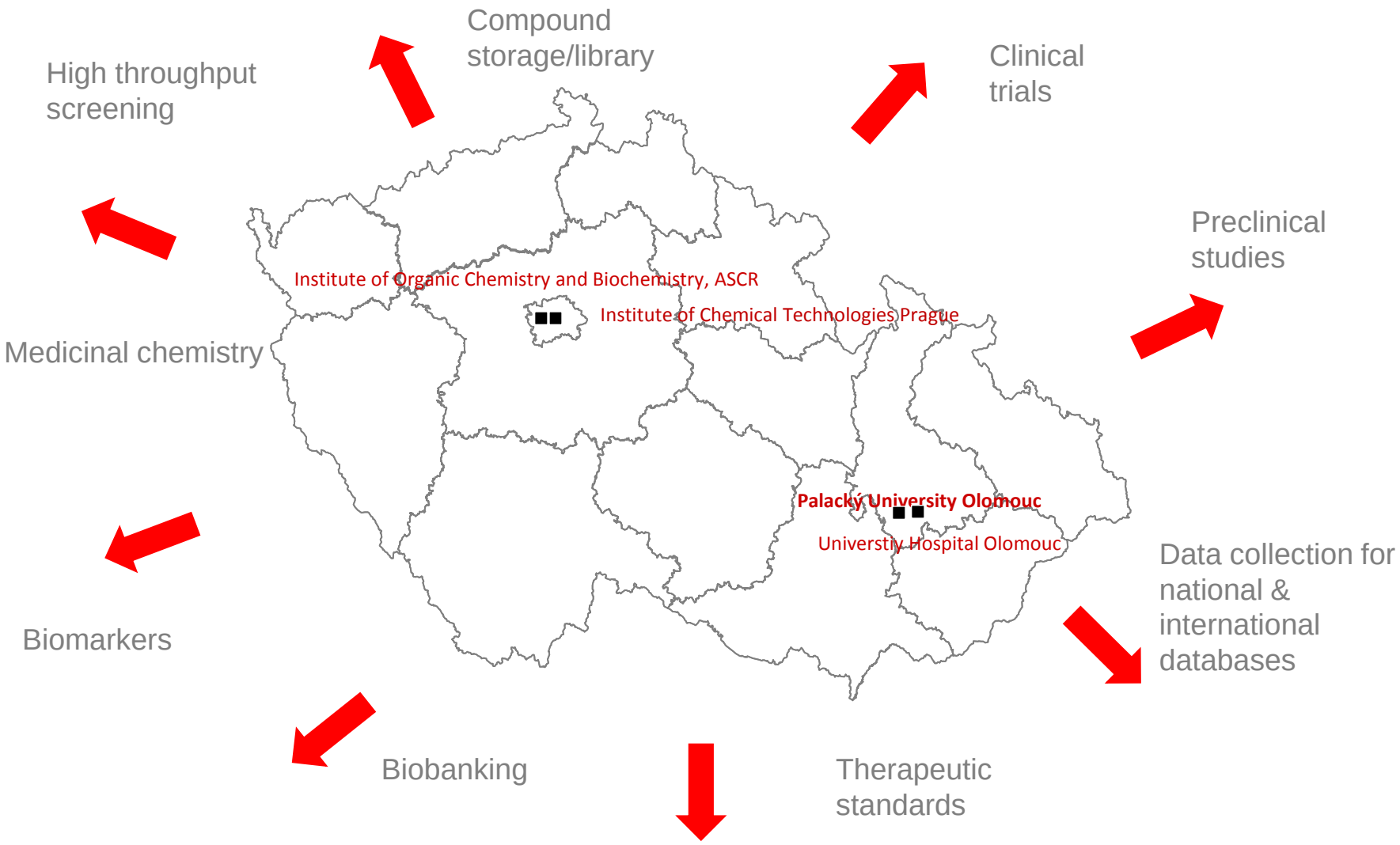
Infrastructural project for chemical biology and translational medicine (BIOMEDREG) – concentrating, evaluating and developing the national chemical knowledge



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Biomedicine for regional development and human resources

BIOMEDREG

Project Leader:
Palacký Universty in Olomouci

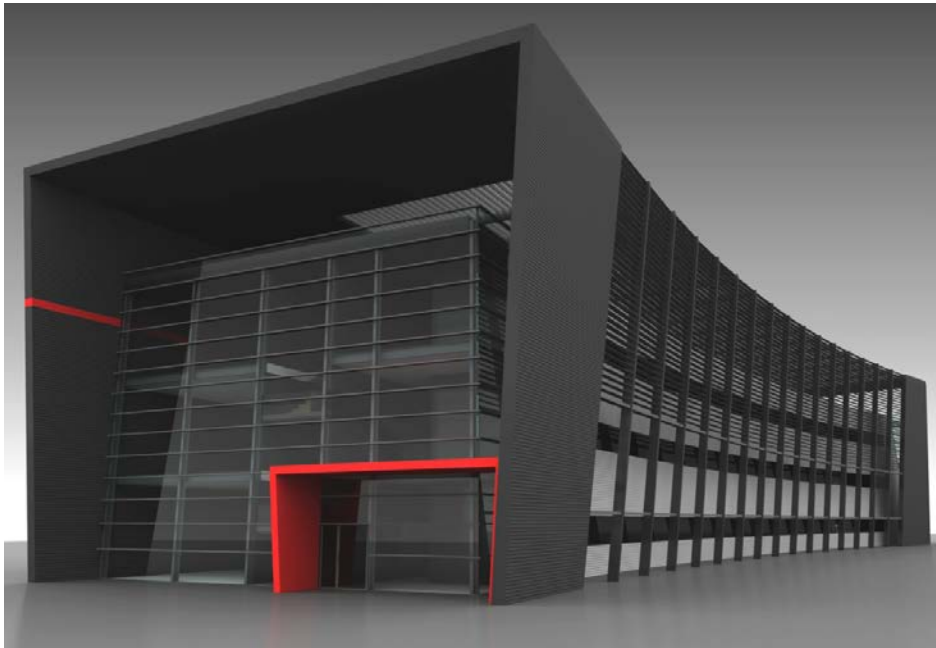
Partners:
University Hospital in Olomouc
Institute of Organic Chemistry and Biochemistry AS CR
Institute of Chemical Technologies in Prague

Allocation:
Approx. 40 M €

2nd Priority Axis OP VaVpI

Phase of the Project:
Realization phase started on April 1, 2010

Information:
www.biomedreg.eu, www.imtm.cz



Building of research infrastrucutres in the Czech Republic

1952-56

Professor of Pathology R. Kodousek

2012

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Core facilities

- Genomics (HTS qPCR in 1536 format), Affymetrix platform, NGS, mass spectrometry (Sequenome)
- Proteomics (2x MALDI-TOF/TOF, HPLC-MS, qTRAP, qTOF, Orbitrap)
- Metabolomics (GC-TOF, qTRAP, Orbitrap)
- Microscopy: AFM, Raman microscopy, IR microscopy, confocal spinning disc and laser scanning microscopy, superresoltion, PALM, SIM, TIRF, transmission and raster EM)
- HTS/HCA analysis (compound library+dispensing, 3-arm robotic system for screening of small molecules in BSL2+/BSL3 and/or hypoxic environment, readers: fluorescence, luminisence, radioactivity, absorbance, wide field confocal HCA, mass spectrometry based screening)
- BSL3 laboratories, GMO, laboratoře pro vysoce nebezpečné látky (SUJB)
- Small animal imaging centre: optical (fluorescence, luminiscence)., X-ray, PET/SPECT/CT, ultrasound
- Radiochemistry, medicinal and combinatiorial chemistry
- Biobank, including specialized collections (tumors tested for in vitro response to anticancer drugs), blood from tumour draining veins, etc.

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Research Program #1- Molecular Mechanisms of Diseases and Molecular Targets

(Jiri Bartek & Martin Petrek)

- Mechanistic understanding of pathways activated in response to DNA damage
- Specific features of cancer stem cells (CSC) biology and DDR
- Identification of potential targets for cancer treatment, including CSCs
- Polymorphisms of inflammatory genes
- New molecular targets in microbes
- High-throughput siRNA and drug/siRNA screens and target validation

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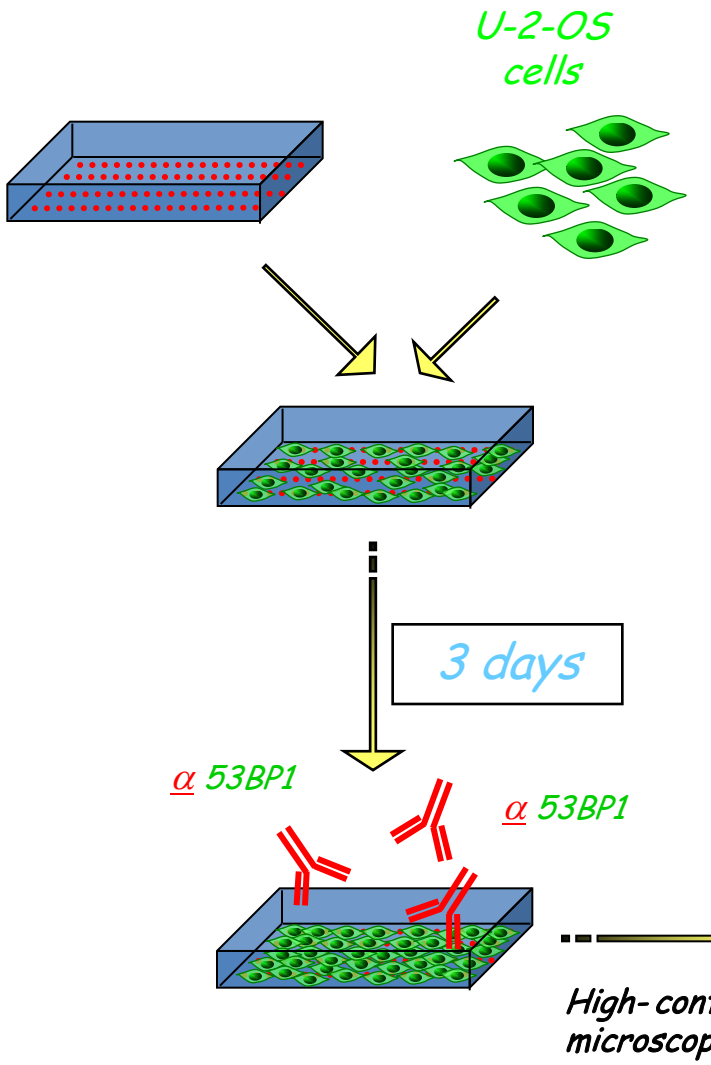
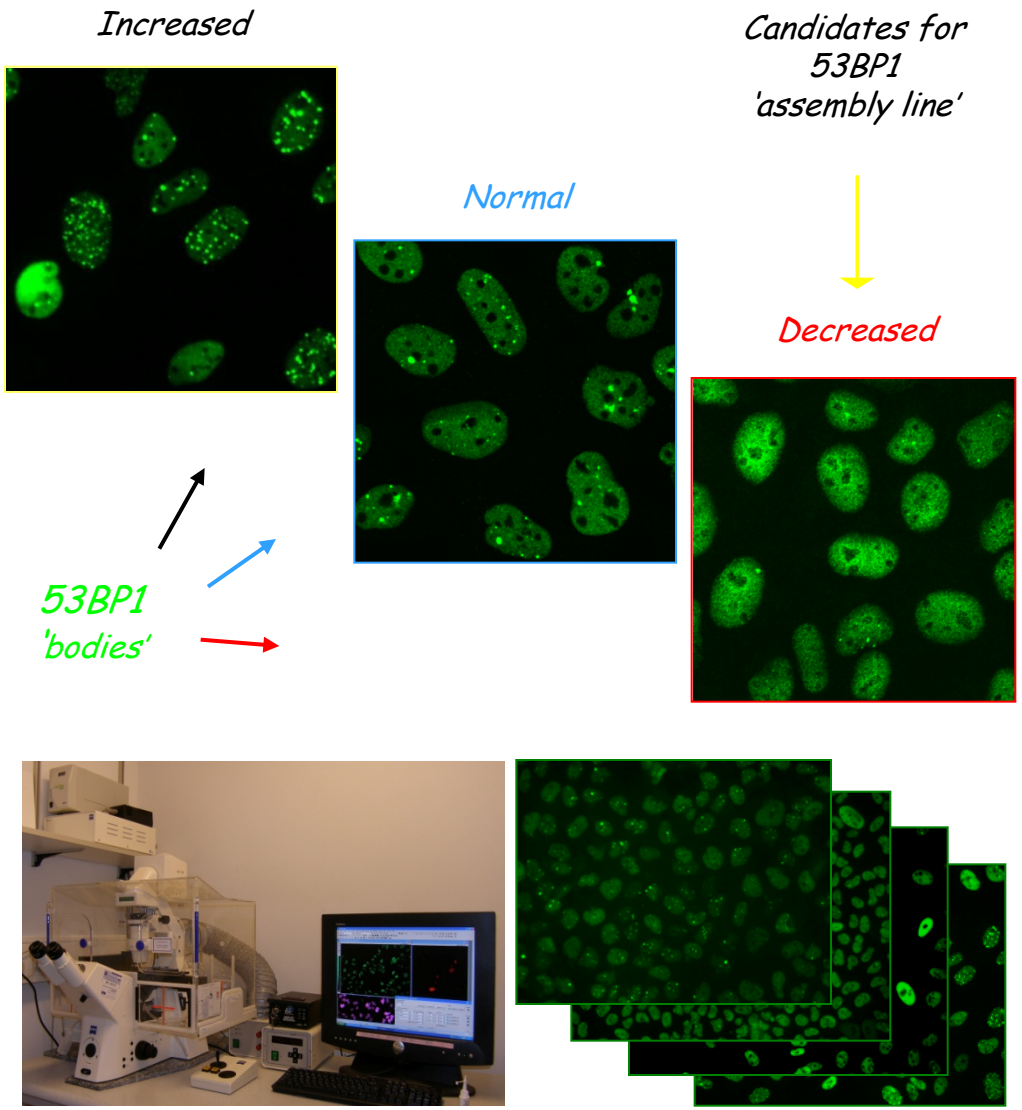
Readout & workflow of the siRNA screen





Doil et al., Cell, Feb.6, 2009

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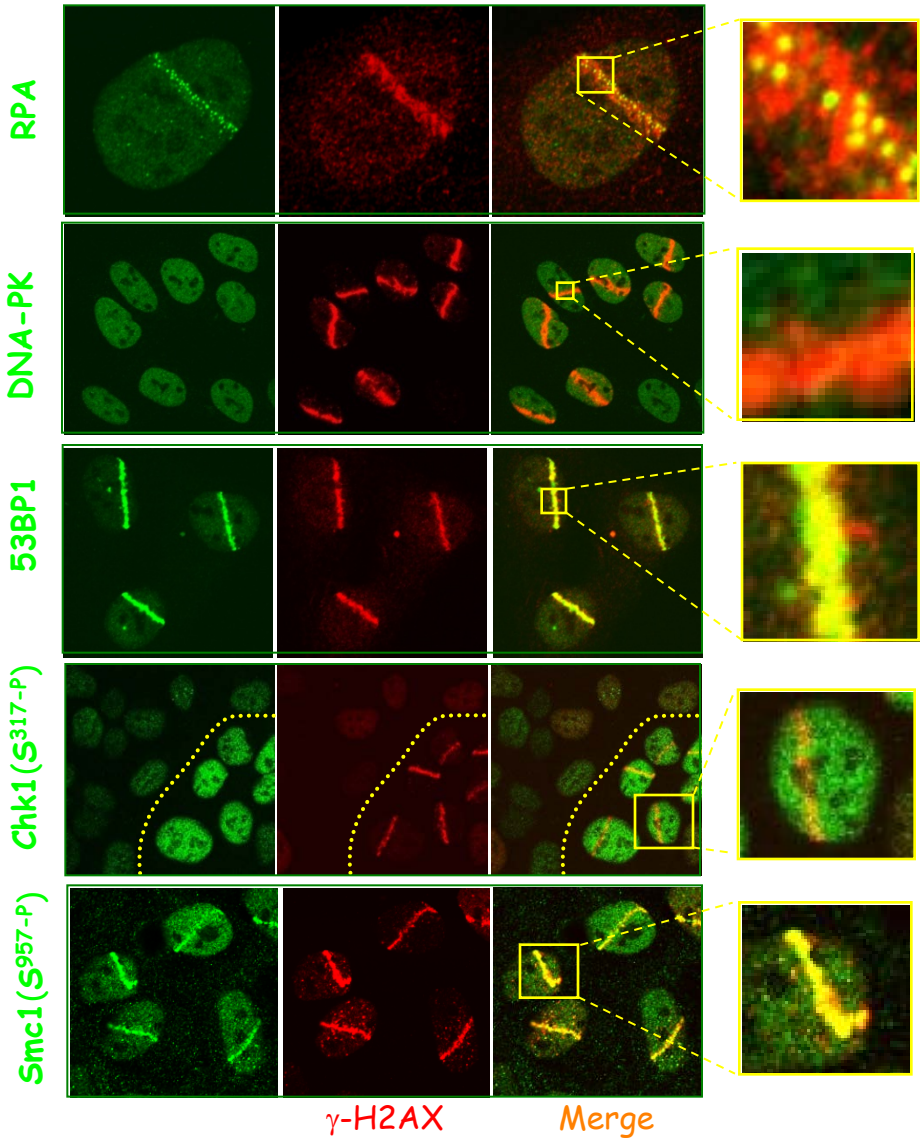
Laser micro-irradiation used for basic characterization of proteins (spatial 'map' of nuclear sub-compartments)



Processed DNA double strand breaks (DSBs)
RPA, ATRIP, ATR, Rad51, Rad52, FancD2, BRCA2, Rad9, Rad17, TopBP1, Nbs1, Mre11, Rad50

DSB- flanking chromatin
Mdc1, 53BP1, ATM, Mre11, Nbs1, BRCA1

Messengers (focal lesion nucleus)
Chk1, Chk2, Kap1, + Claspin,

Local modifications without recruitment
Histones, Smc1/Smc3 cohesin

Bekker-Jensen et al., J. Cell Biol., 2005 & 2006
Ziv et al., Nature Cell Biol. July, 2006 (Kap-1)

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Research Program #2- Medicinal Chemistry

(Vladimir Kral & Jan Hlavac)

- To purchase, collect and establish chemical library of small molecules (100-500.000 compounds) covering the current chemical space, including unique structures synthesized by project partners.
- To analyze structure – activity relationship (chemoinformatics) and optimize hits to leads.
- Introduce and utilize combinatorial chemistry approaches
- Up-scale synthesis of candidate molecules for validation test
- Regulatory affairs and quality assurance
- Development of novel drugs, active foods and therapies

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Current joined projects (IOCB/UPOL/ICT)

- MDP analogues – immunomodulatory molecules, vaccine adjuvants, anticancer agents
- Metalocarboranes – antiviral, antibacterial and anticancer properties
- Nucleotide and nucleoside analogues – anticancer and antiviral activities
- Terpenoid compounds – antiviral, immunomodulatory and anticancer activities
- Antimicrobial peptides
- Targeted biological therapies – transport systems
- New biomarkers – new diagnostic tools (modified DNA stains and nucleotides)
- Chinolone derivatives – tumor specific pyruvat kinase modulators
- Nanoparticles in medicine (antimicrobial properties, in vivo diagnostics, transport systems)

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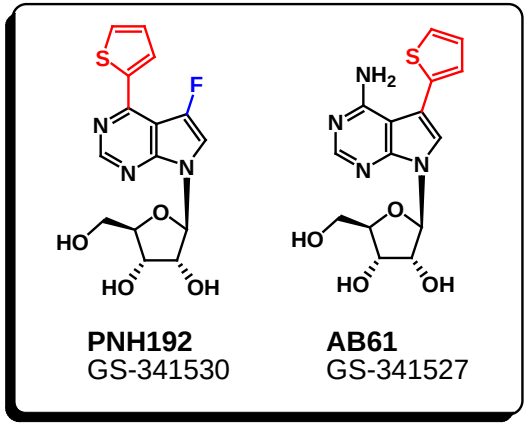
Nucleotide and nucelotide analogues with anticancer, antiviral and antiinfective properties

PI: Prof. Hocek IOCHB Prague

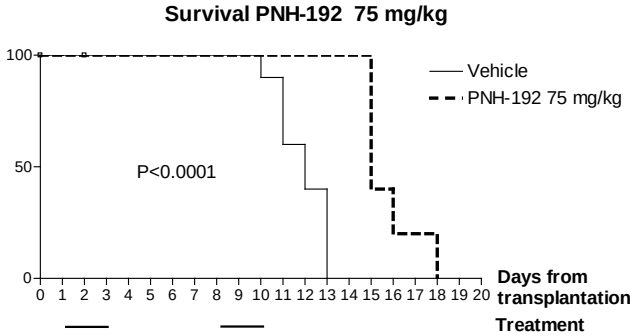


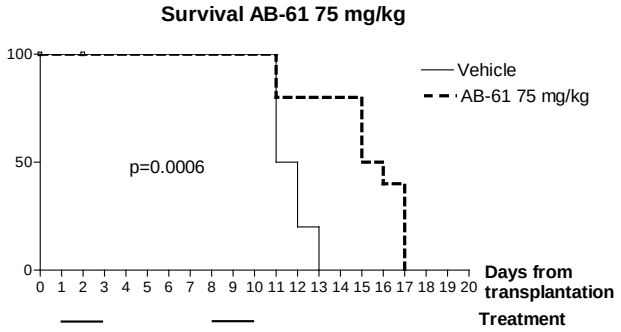
Discovery of novel hetaryl-7-deazapurine ribonucleoside cytostatics

PCT/CZ2009/000004.
US 61/171.656.
PCT/CZ2010/000050
J. Med. Chem. **2010**, *53*, 460.
J. Med. Chem. **2011**, *54*, 5498

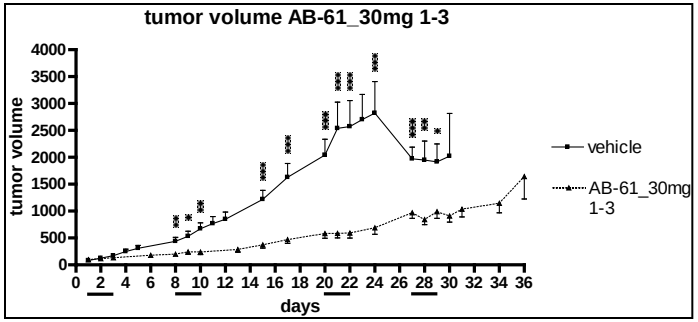
undergo *in vivo* toxicology and cytostatic activity study

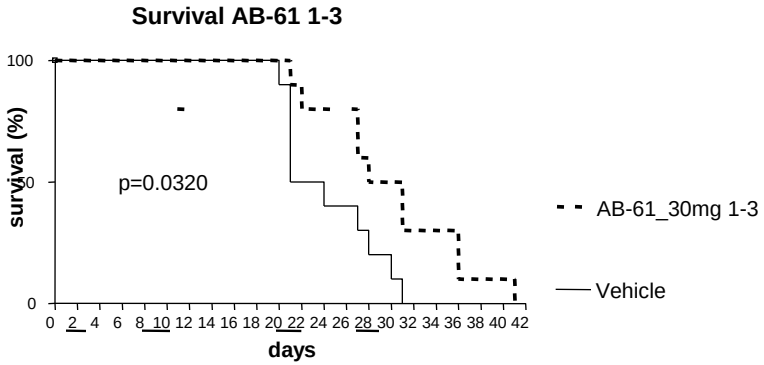
P388D1 leukemia in mice





HT-29 colorectal tumor in mice





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Research Program #3- Chemical biology & Experimental Therapeutics

(Marian Hajduch & Peter Dzubak)

Research Program #5- Pharmacology & Toxicology

(Pavel Anzenbacher& Jitka Ulrichova)

- Identification of biologically active small molecules and biologics
- Biological assays in uHTS format
- BL3 level
- Pharmacology and toxicology of compounds
- In vitro and in vivo validation tests
- Regulatory affairs and quality assurance
- Development of novel drugs, active foods and therapies

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uHTS/HCA screening facility, including BSL2+ and BSL3

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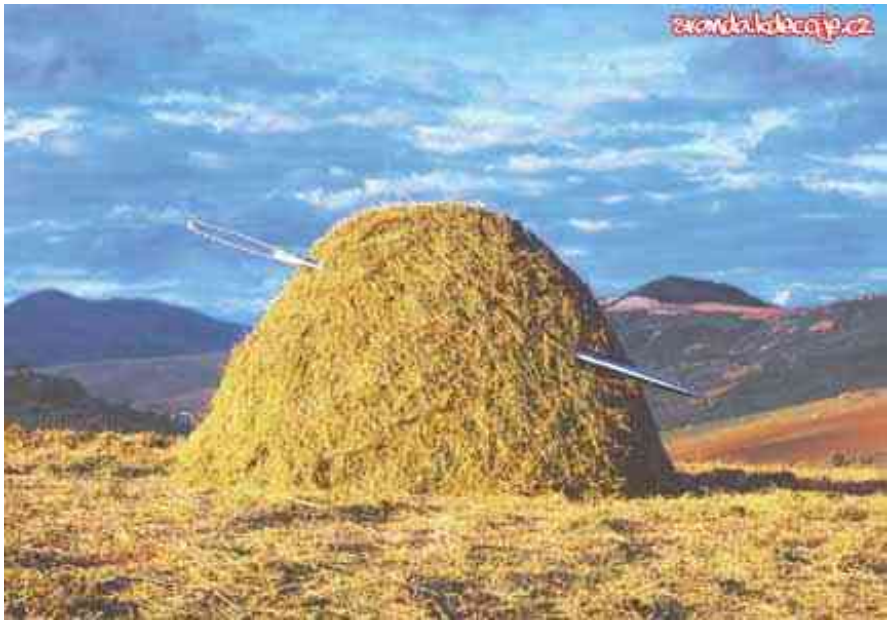
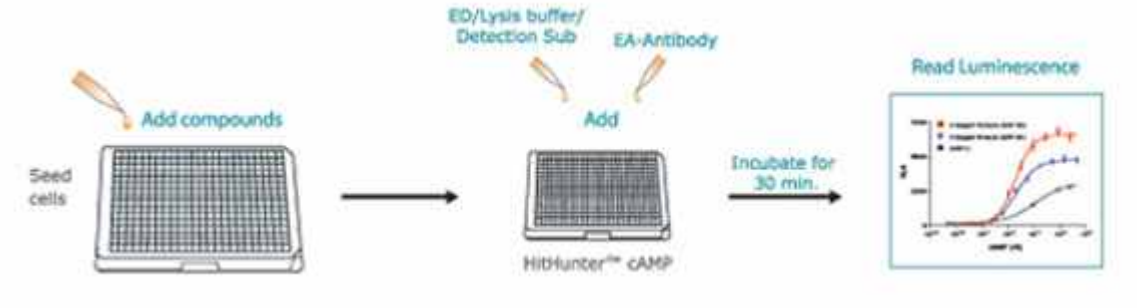
Needle in a haystack

dream



reality



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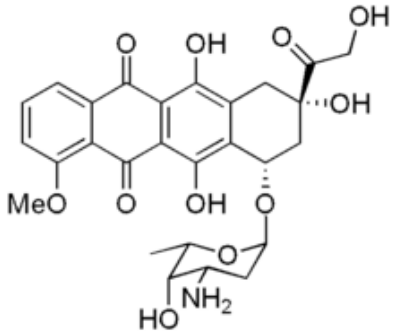
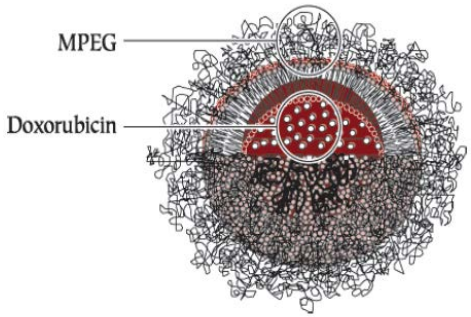
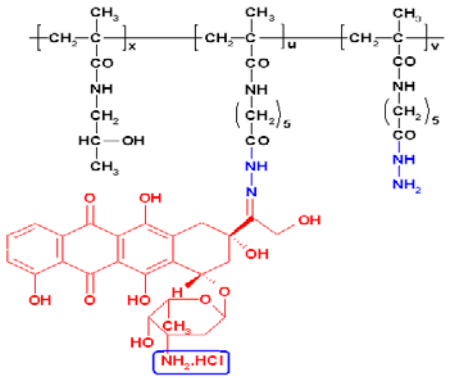
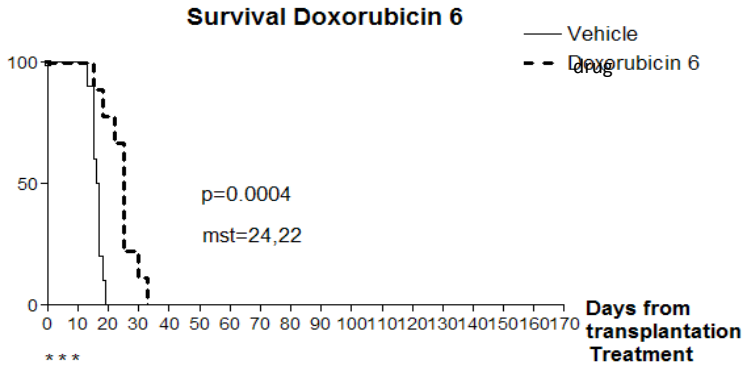
Polymeric anticancer drugs and diagnostics (PI: Prof. Ulbrich, IMCH AS CR)

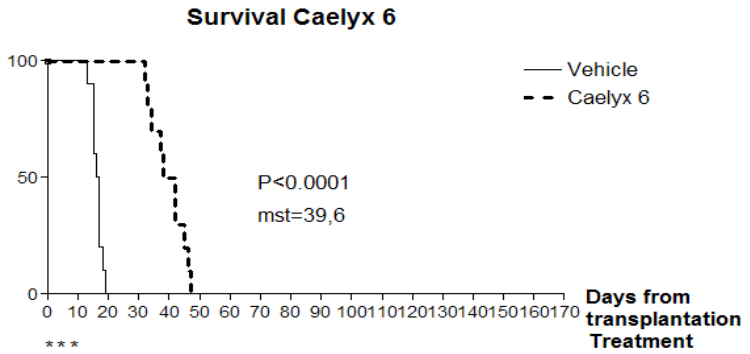
Polymeric anticancer doxorubicin
IN VIVO efficacy (P388D1 leukemia model)

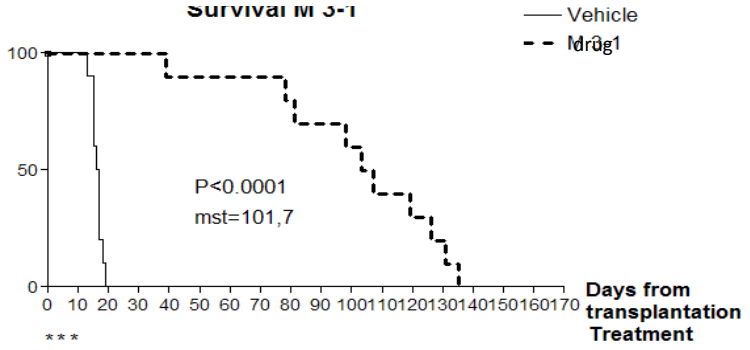












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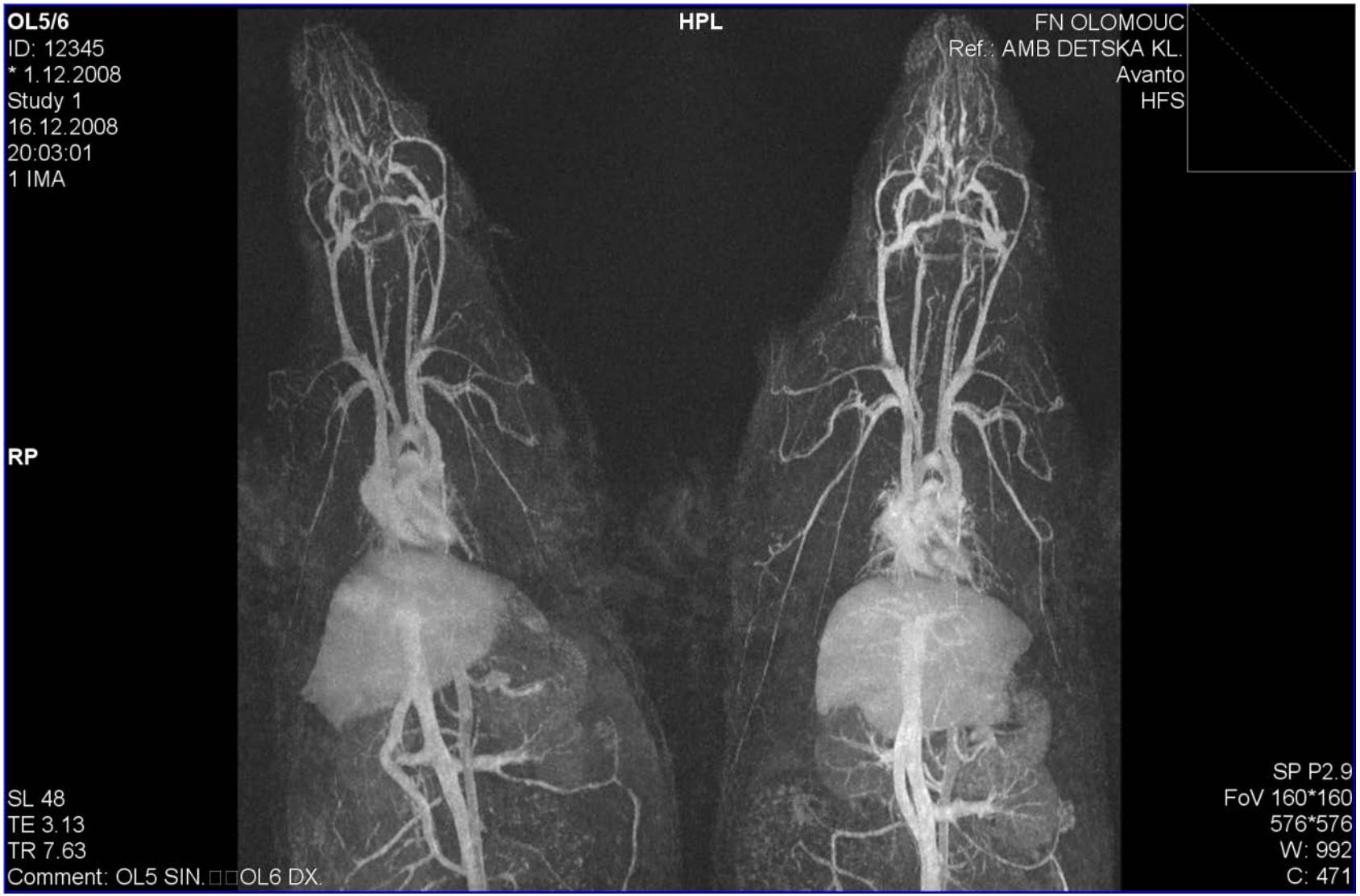
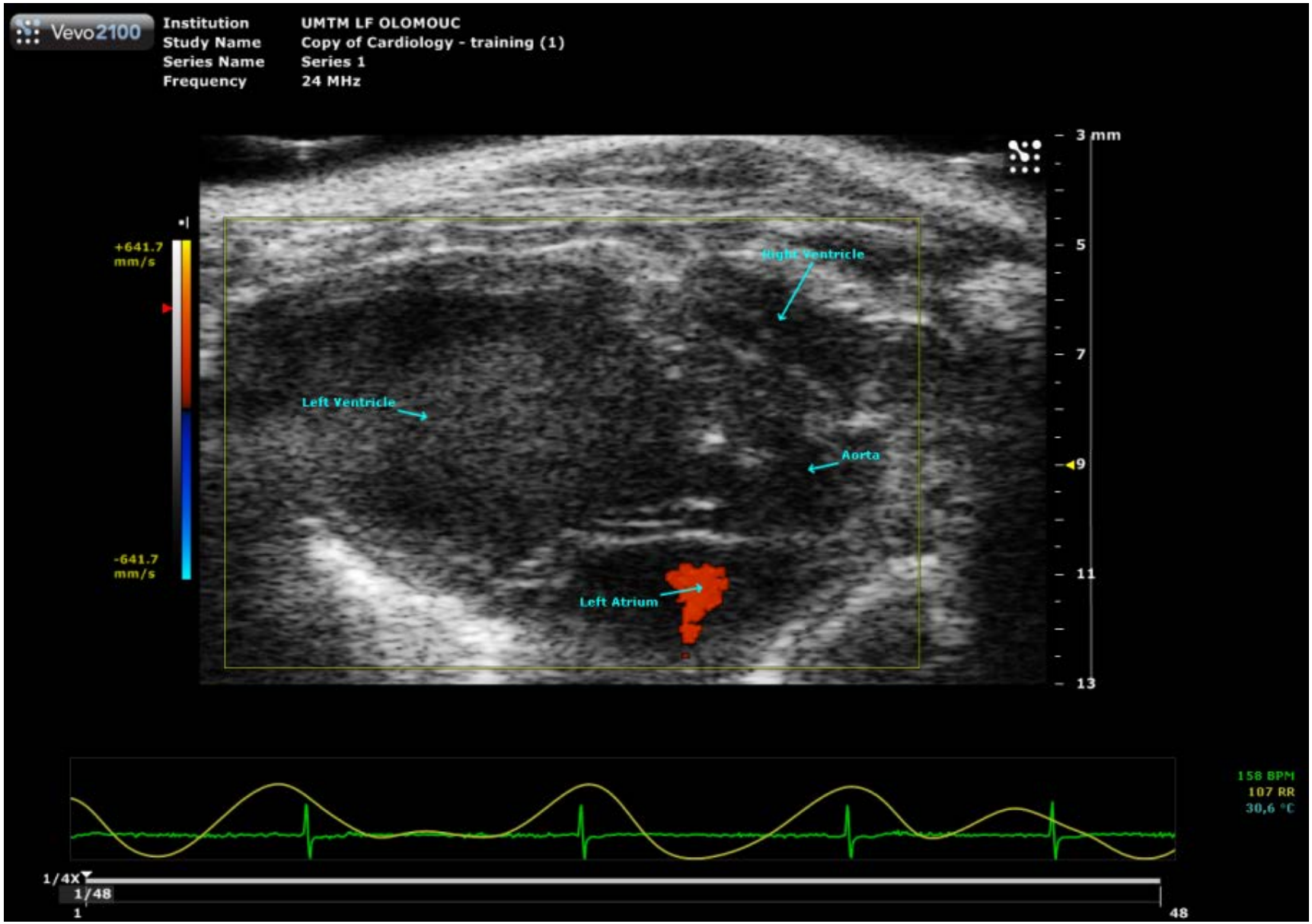
Polymeric anticancer drugs and diagnostics (PI: Prof. Ulbrich, IMCH AS CR)

Polymeric Gd MRI contrast agent – blood pool




Vevo2100
Institution UMTM LF OLOMOUC
Study Name Copy of Cardiology - training (1)
Series Name Series 1
Frequency 24 MHz
+641.7 mm/s
-641.7 mm/s
Right Ventricle
Left Ventricle
Aorta
Left Atrium
3 mm
5
7
9
11
13
158 BPM
107 RR
30,6 °C
1/4X
1/48
1
48

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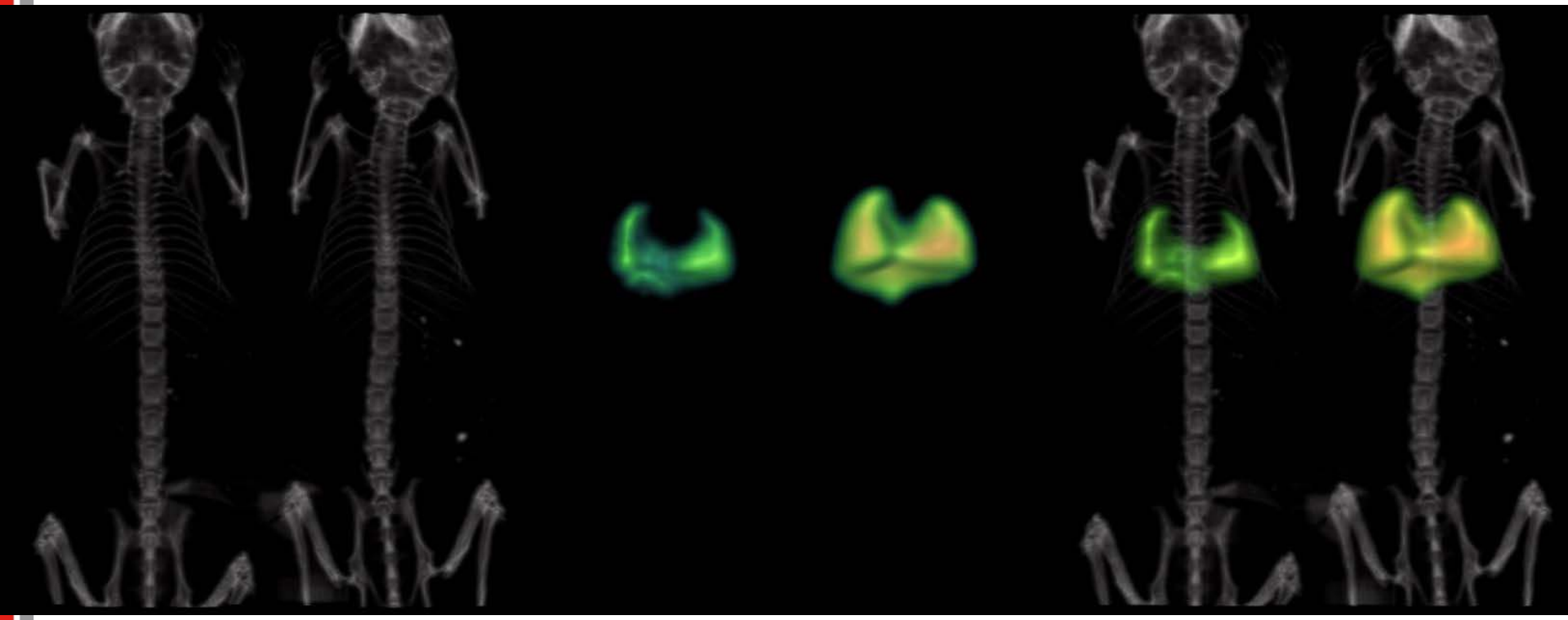

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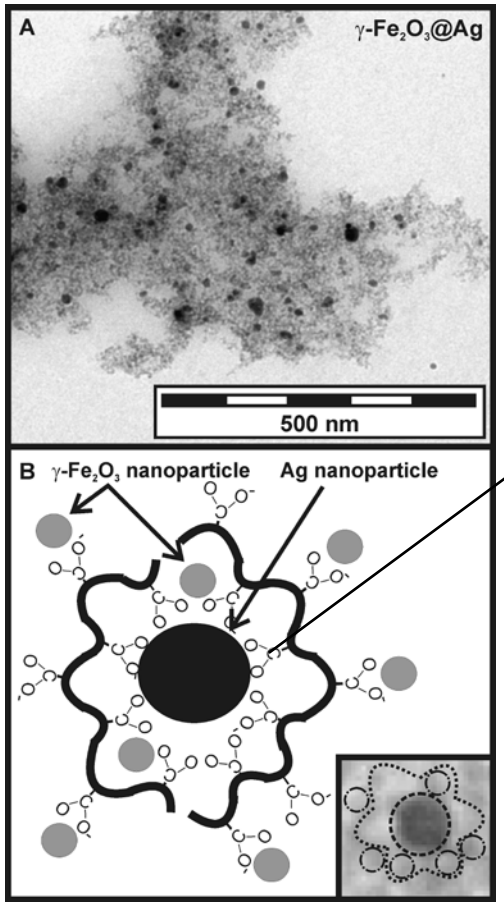
Nanoparticles in medicine (antimicrobial properties, in vivo diagnostics, transport systems)

PI: Prof. Zboril, RCPTM, Palacky University, Olomouc

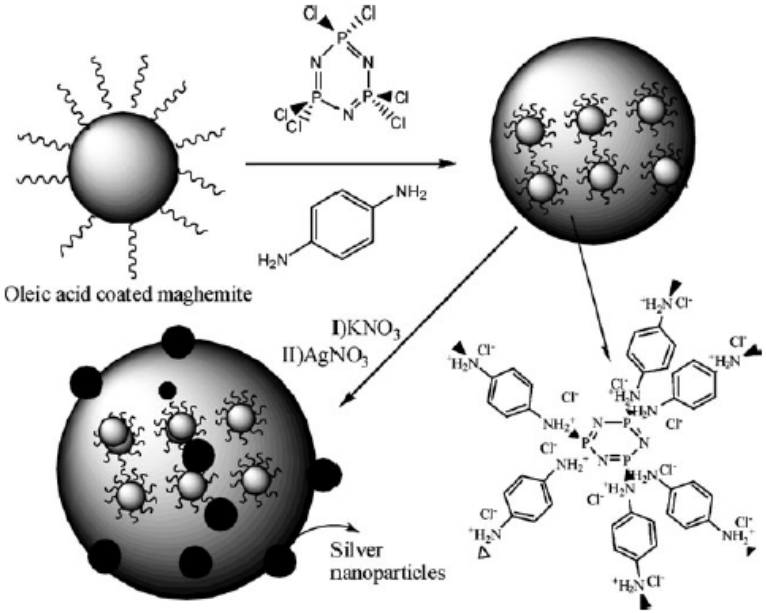
Nanosilver cores coated with maghemite NPs through polyacrylate linker

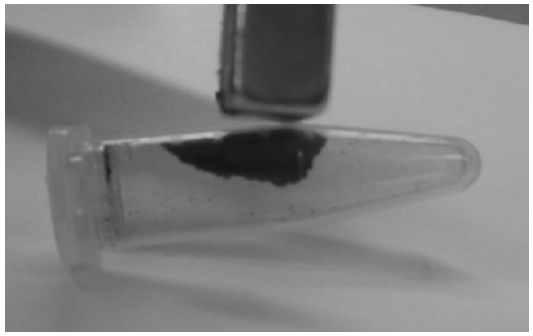


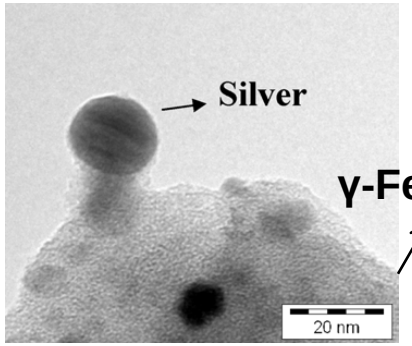
R. Prucek et al. *Biomaterials* 32 (2011) 4704-4713.

polyacrylate linker

oleic-acid coated maghemite NPs in a 1,4-phenylenediamine/phosphotriazine matrix and silver nanoparticles covering the polymer surface







P. Dallas et al. *Adv. Funct. Mater.* 20 (2010) 2347-2354.

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Research Program #4- Biomarkers
(Zdenek Kolar& Jiri Drabek)

- Identification of diagnostic, prognostic and predicitive biomarkers
- Biobanking, specialized collections (>7000 highly characterized tumor collections)
- Validation of biomarkers in clinical trials
- Genomics, Proteomics, Metabolomics
- Regulatory affairs and quality assurance
- Development of diagnostic kits and reagents

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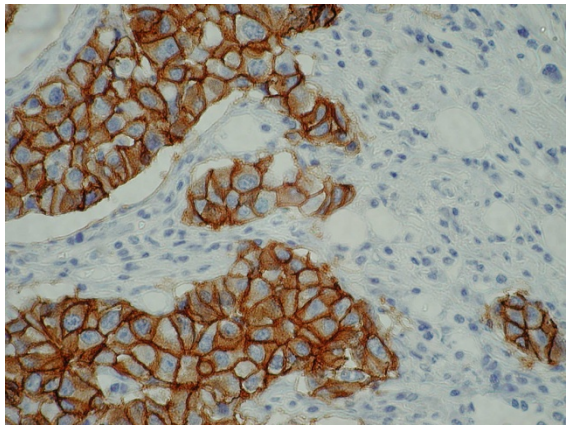
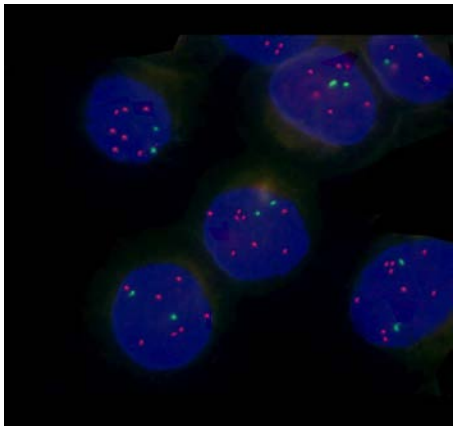
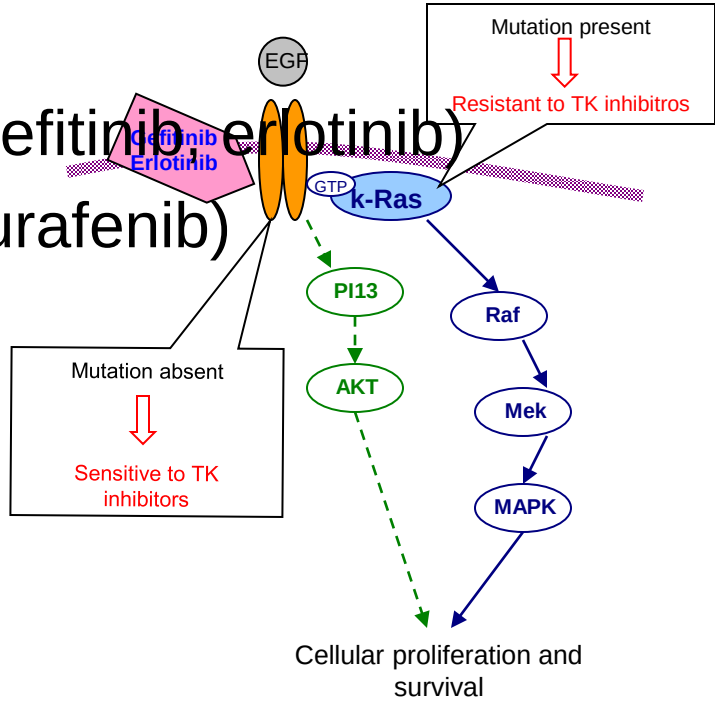
Cancer Biomarkers – Where we are?

Part of clinical routine

- Her-2 in breast and gastric cancers (trastuzumab, lapatinib)
- KRAS/BRAF mutations – colorectal cancers (cetuximab, panitumumab)
- EGFR1 mutations – lung cancers (gefitinib, erlotinib)
- BRAF mutations – melanoma (vemurafenib)







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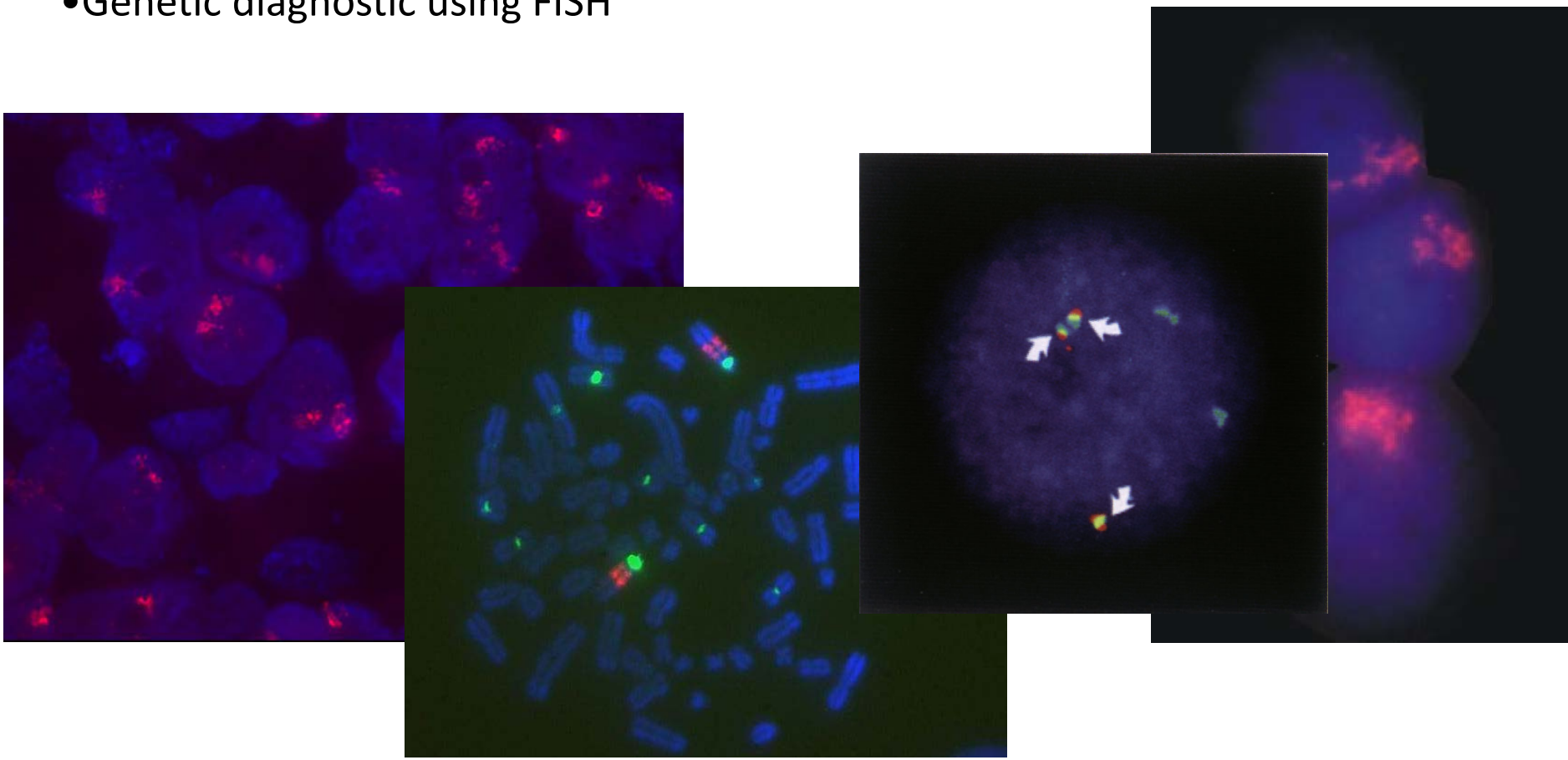
Development of new molecular diagnostics

Diagnostic systems for evaluation of C-MYC, N-MYC, TP53, TOP2A, EGFR1, CDDN1 and others in human cancers:

- Genetic diagnostic using FISH



Diagnostic kits are produced and distributed by IntellMed s.r.o., University spin-off company

www.intellmed.eu

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IntellMed s.r.o. – spin-off

Firma byla založena 23.10.2006 jako spin-off zaměstnanců biomedicínských oborů Univerzity Palackého v Olomouci a kvalifikovaných manažerů se zkušenostmi v distribuci biodiagnostik. Hlavní činností firmy je výroba a distribuce diagnostických reagencií určených pro pracoviště molekulární biologie a cytogenetiky.

Firma IntellMed s.r.o. je certifikována dle normy ČSN EN ISO 9001:2008 a dle normy ČSN EN ISO 13485:2003 (GMP).

CEP17/ LSI Her-2/neu FISH kit je certifikován pro použití jako in vitro diagnostikum (CE IVD).

Certificate no.: SCE 11 N - 0316

tayllorcox.com
ensure your certification

Certificate

Quality Management System Organization

IntellMed, s.r.o.

Identification No.: 277 80 317
Václavské náměstí 820/41, 110 00 Praha 1, Czech Republic

Premises:
Šlechtitelů 813/21, 779 00 Olomouc-Holice, Czech Republic

has been examined and found in conformity with requirements of the standard

ISO 9001:2008

for the following range of activities:

- manufacture, purchase, sale, testing, research and analysis of reagents, antibodies and other products for laboratory, education, research and for medical institutions

Date of the certification: 15.7.2011
This certificate is valid until: 14.7.2014

Chief Executive Officer

Place and date of issue of the certificate: Prague, 21.7.2011

TAYLLOR & COX s.r.o.
Konviktská 291/24, Staré Město - Praha 1, CZ 110 00, info@tayllorcox.com, tel.: +44 121 288 1127
To check this certificate validity please call the phone number: +420 222 553 101

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has been examined and found in conformity with requirements of the standard

ISO 13485:2003

for the following range of activities:

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Date of the certification: 15.7.2011
This certificate is valid until: 14.7.2014

Chief Executive Officer

Place and date of issue of the certificate: Prague, 21.7.2011

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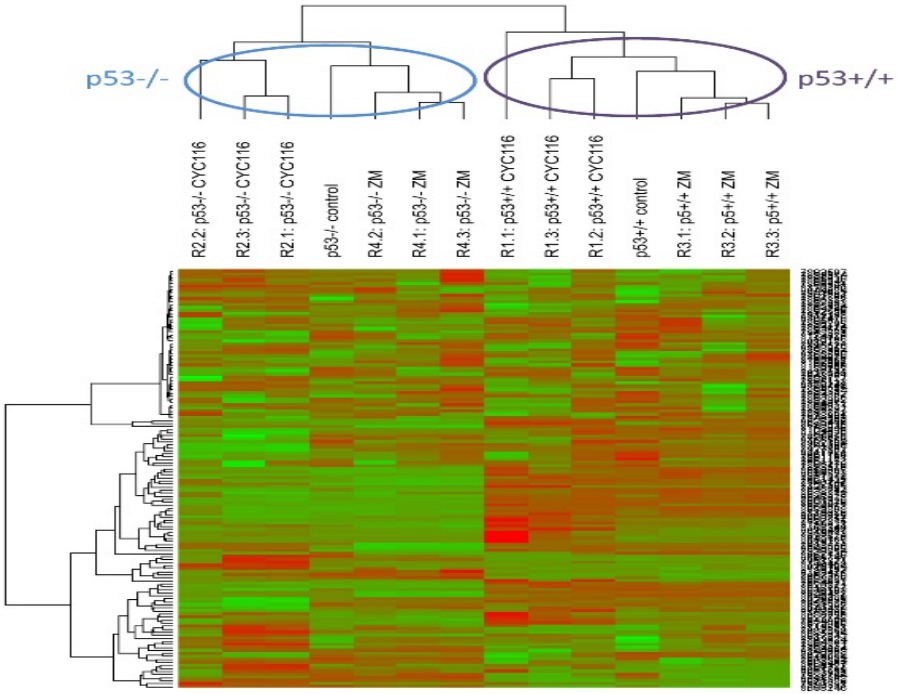
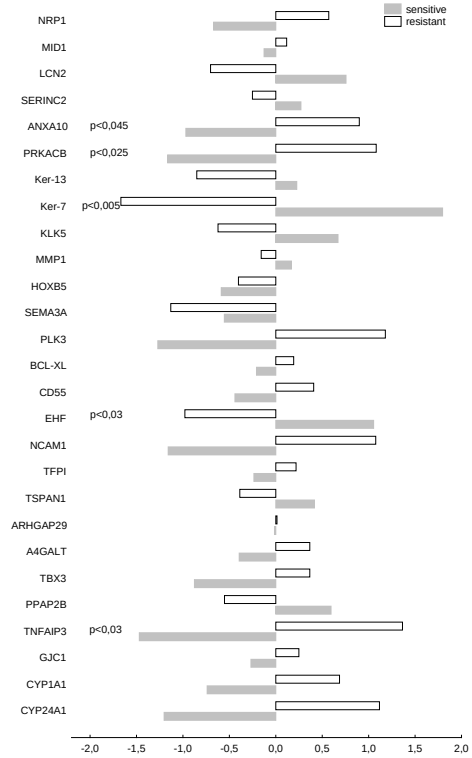
BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

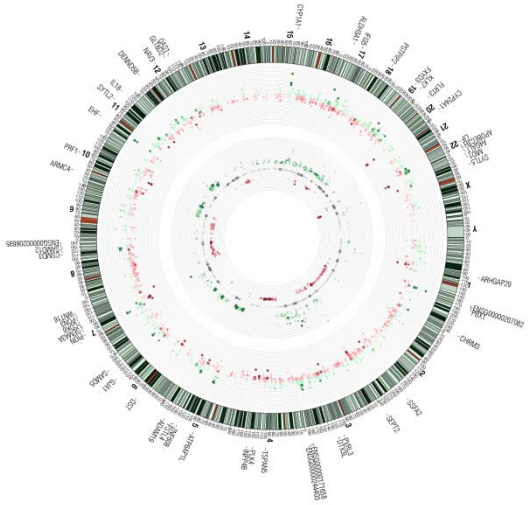
Biomarkers of drug resistance to Aurora kinases inhibitors

Newly discovered Serine/Threonine kinases : Regulates Mitosis

- Aurora A- Centrosome maturation, spindle assembly
- Aurora B - Chromosomal segregation & Cytokinesis
- Abnormal activity – Aneuploidy and Transformation
- Considered as Oncogenes (Kollareddy *et al*, 2008)







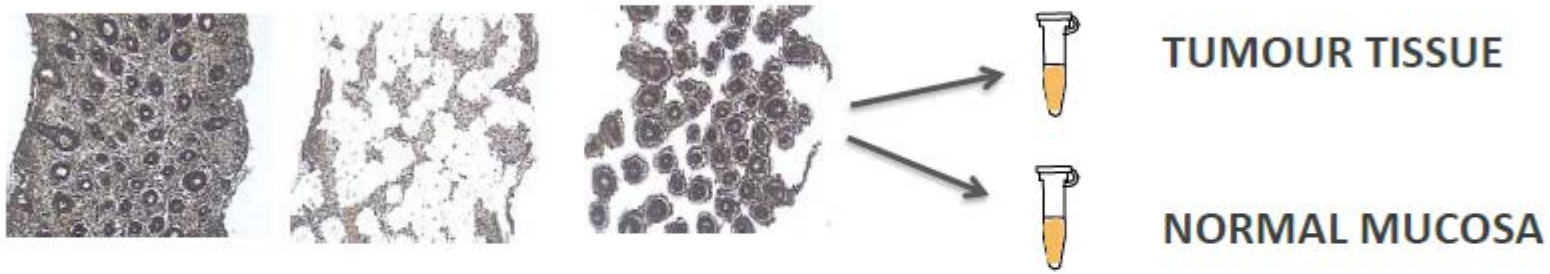
BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Phased biomarker development pipeline in colorectal cancer

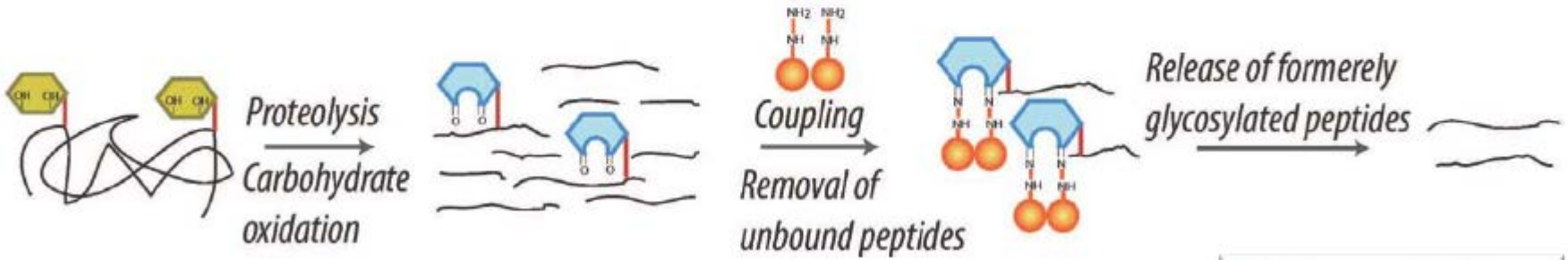
DISCOVERY PHASE

Sample preparation

Step 1. Dissection of epithelium from mucosa



Step 2. Isolation of *N*-linked glycopeptides



90% specificity

Collaboration with S. Surinova and Rudi Aebershold, ETH Zurrich

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Phased biomarker development pipeline

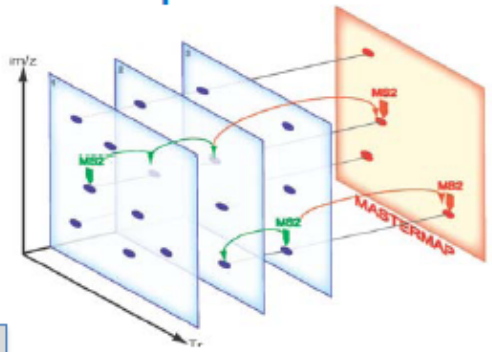
DISCOVERY PHASE

Sample analysis

MS1 maps + Label-free quantification

LTQ-FT

SuperHirn

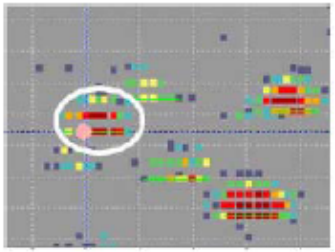


Master Map

m/z	Sample1	Sample2	Sample x
587.5349	Intensity	Intensity	Intensity
869.6247	Intensity	Intensity	Intensity
605.7051	Intensity	Intensity	Intensity

10x3 runs
~30 000 MS1 features
~2000 with MS2
765 glycopeptides
446 glycoproteins

Raw data



Candidate list

Candidate name	# Peptides	Fold change
Glycoprotein 1	12	DOWN
Glycoprotein 2	1	UP
Glycoprotein 3	4	DOWN
Glycoprotein 4	7	UP
Glycoprotein 5	3	UP
Glycoprotein 6	1	UP
...		

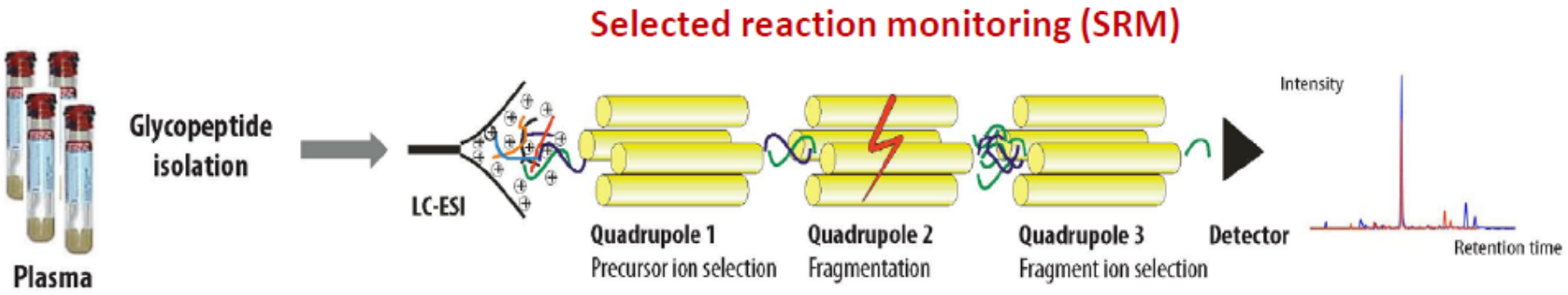
Collaboration with S. Surinova and Rudi Aebershold, ETH Zurrich

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Phased biomarker development pipeline

VERIFICATION PHASE

Targeted analysis of candidates in plasma



* MS equivalent of ELISA
* Monitoring of ***all and only the candidates*** across a high number of samples
* Absolute protein quantities

Collaboration with S. Surinova and Rudi Aebershold, ETH Zurrich

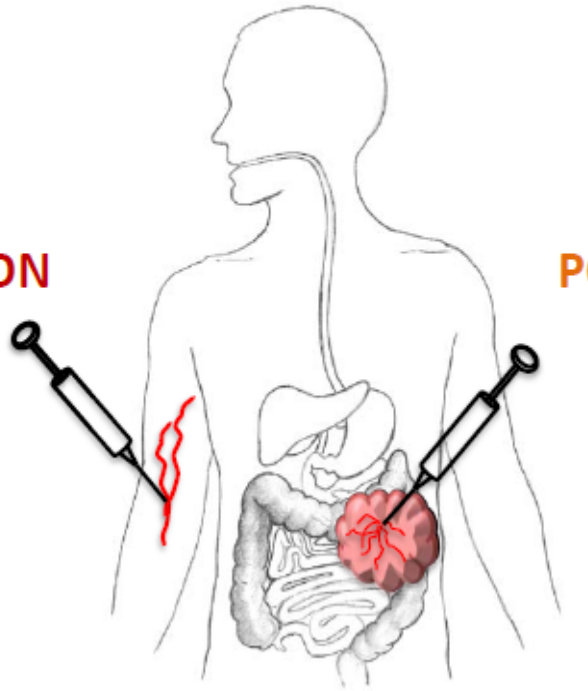
BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Phased biomarker development pipeline

VERIFICATION PHASE

Two sources of patients' plasma

SYSTEMIC CIRCULATION



PORTAL VEIN SYSTEM

➢ **Tumour drainage vein**
Enhanced cancer-related protein changes

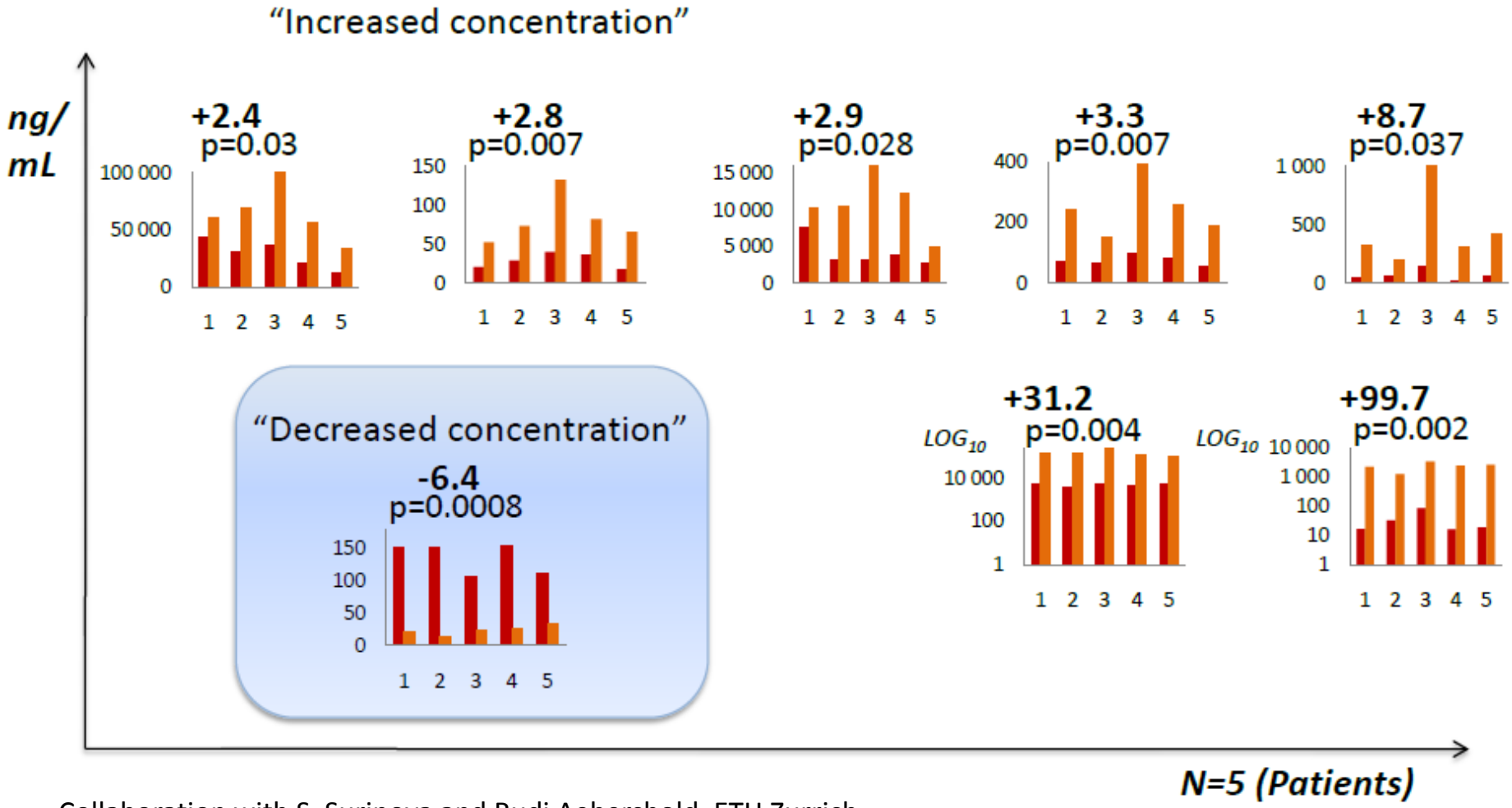
Collaboration with S. Surinova and Rudi Aebershold, ETH Zurrich

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Phased biomarker development pipeline

VERIFICATION PHASE

Systemic Plasma *versus* Portal Plasma



Collaboration with S. Surinova and Rudi Aebershold, ETH Zurrich

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

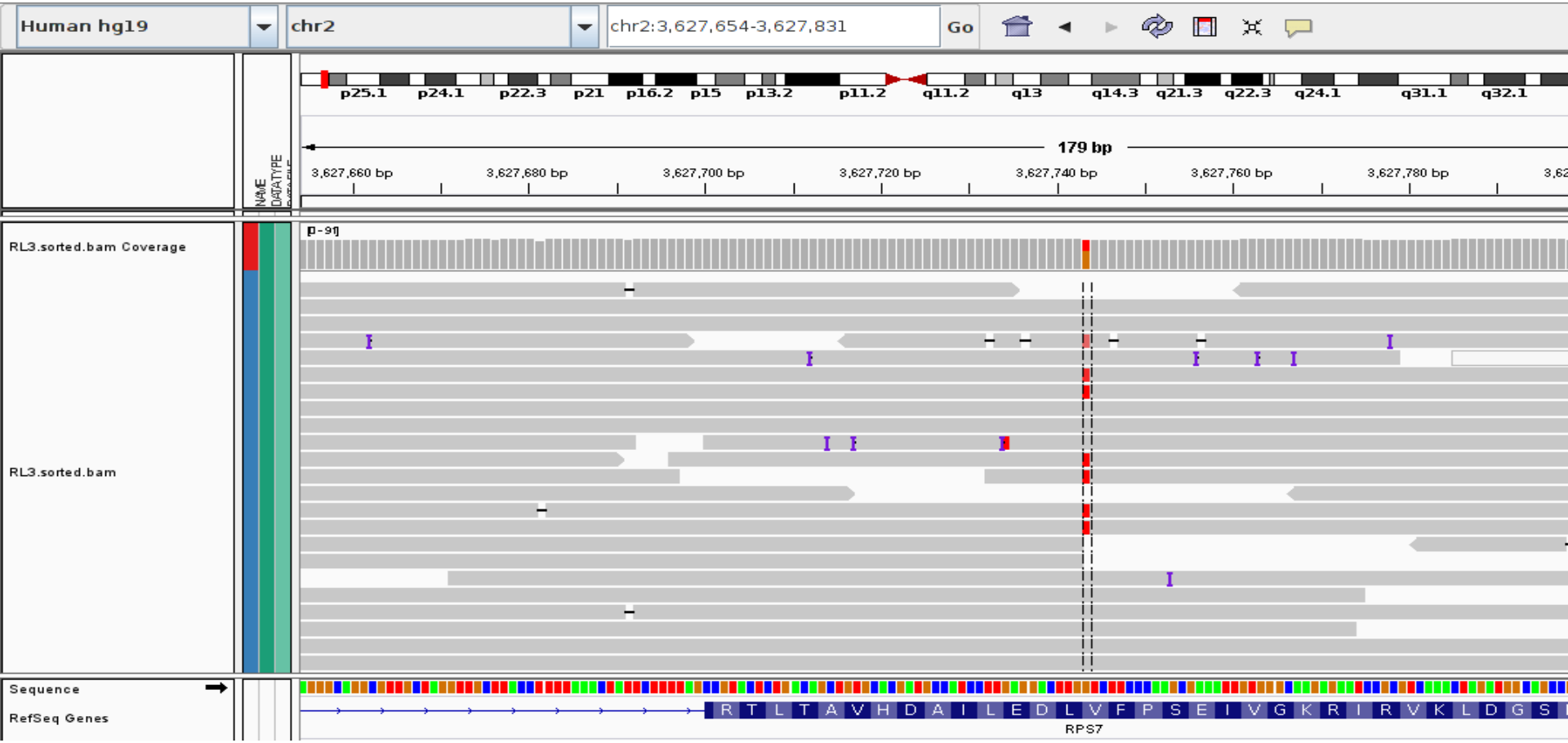
DBA-Diamond-Blackfan anemia – next genome sequencing

- Rare hereditary disease with incidence 5-7 / $1x10^6$
- Anemia presents in the first year of life (erythrocytic anemia)
- Genetic etiology is known in approximately 50 % of cases
- Inheritance is autosomal dominant
- Disease is associated with mutations/disorders in RP (ribosomal) genes
- Current list of DBA related genes: RPS7, 10, 17, 19, 24, 26; RPL5, 11, 35A

- 15 patiens – 12 with unknown mutation / 3 controls

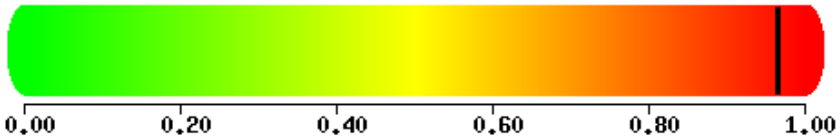
Goals of project

1. Sequence all CDSs of RP genes (target regions 106 658 bases) by sequence capture hybridization.
2. Identification molecular causalities in patients with unknown “mutation”.



RPS7 134V→F

This mutation is predicted to be **PROBABLY DAMAGING** with a score of **0.965** (sensitivity: **0.78**; specificity: **0.95**)



by **PolyPhen**

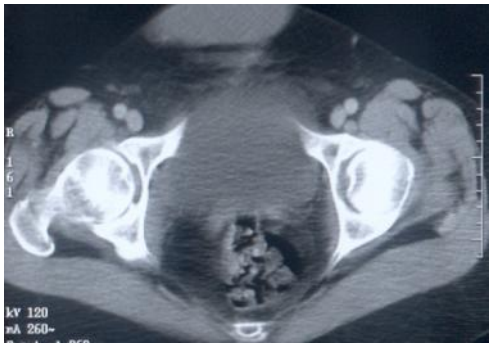
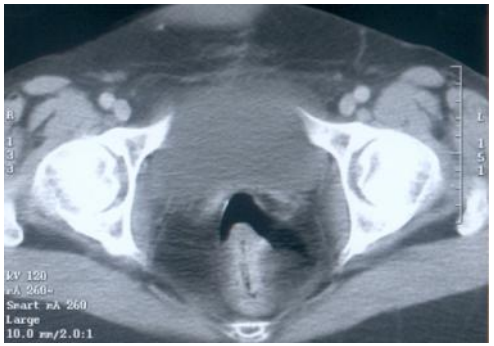
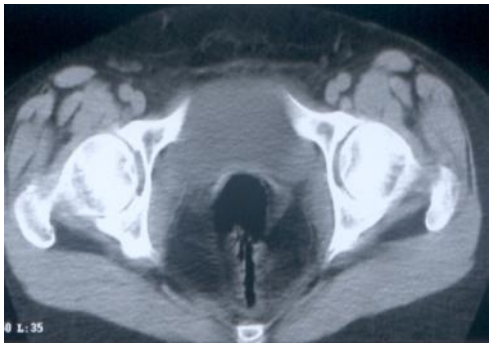
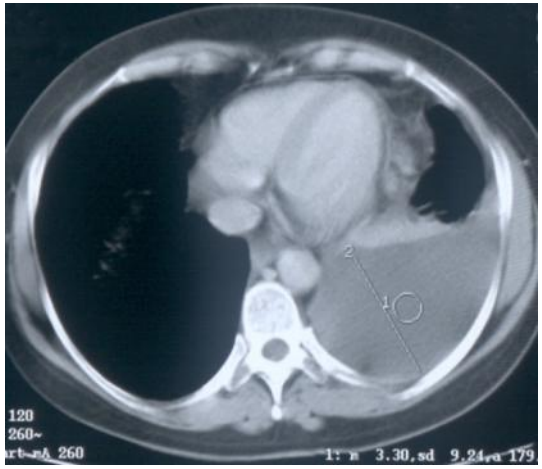
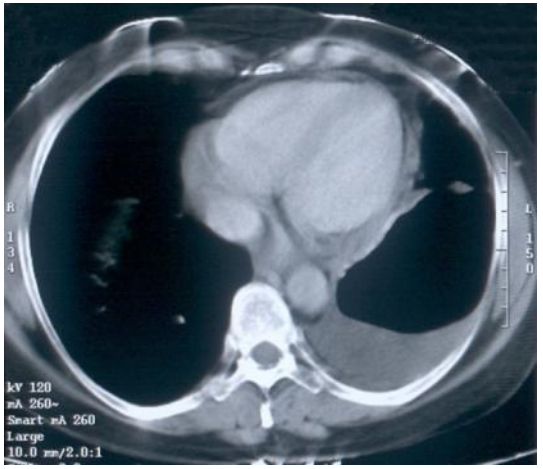
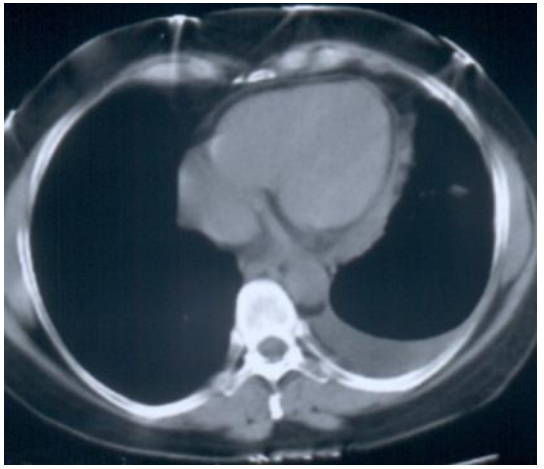
BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Research Program #6- Translational Medicine
(Jiri Ehrmann & Vladimir Mihal)

- To translate basic knowledge to clinical practice
- To define clinical needs and translate them into research programms
- Collect and analyze clinical data
- Perform early clinical trials
- Regulatory affairs and quality assurance
- Development of novel biomarkers, drugs, active foods and therapies

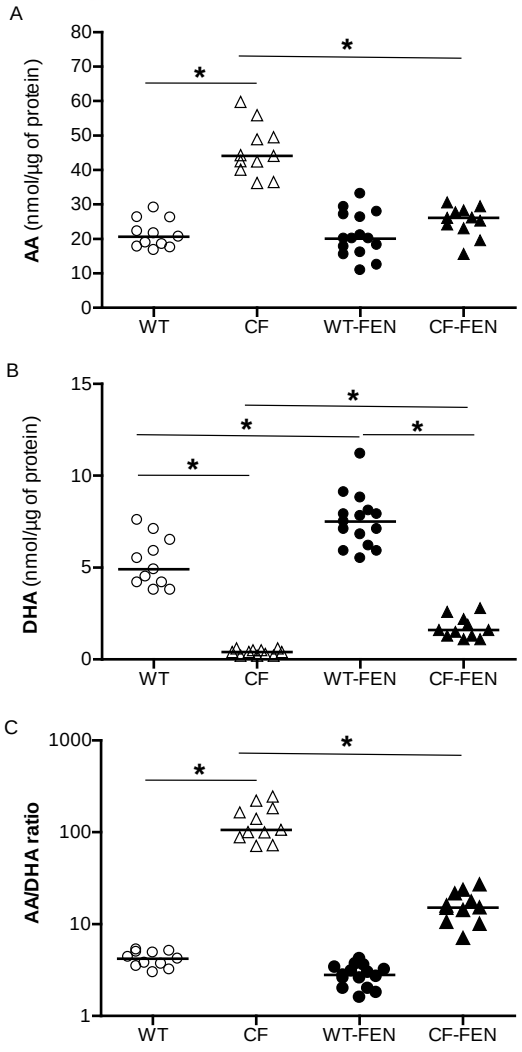
BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

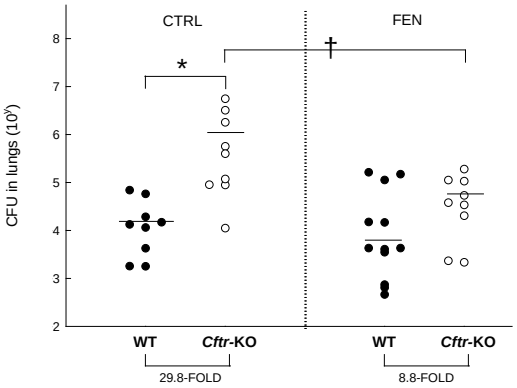
Clinical efficacy of Protaxel therapy in ovarian carcinoma patient – Phase I trial
Biophysica Fnd. and Interpharma Praha, a.s.

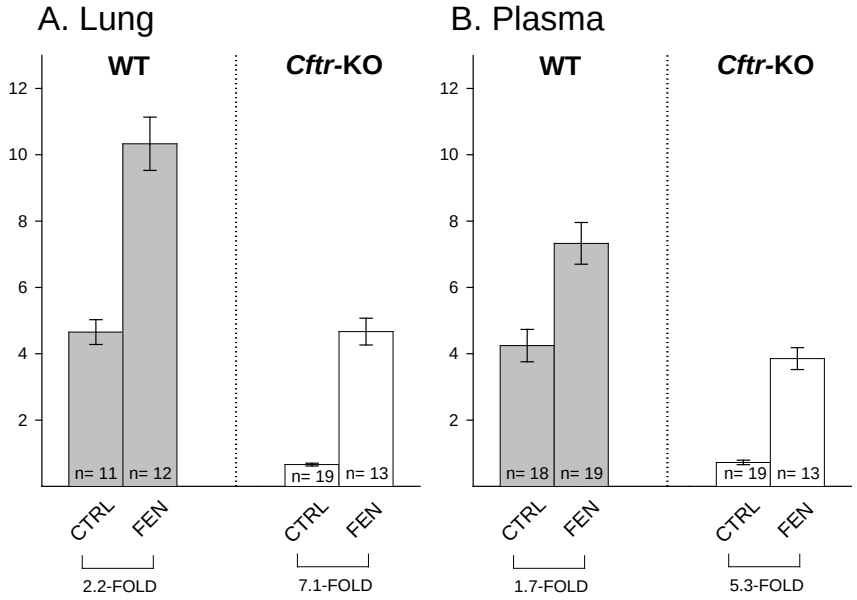
before treatment	after 3 cycles	after 5 cycles
		
		
CA-125: 1400	640	106 ng/ml

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Fenretinide in Cystic Fibrosis
P.I.: Prof. Radzioch, McGill University







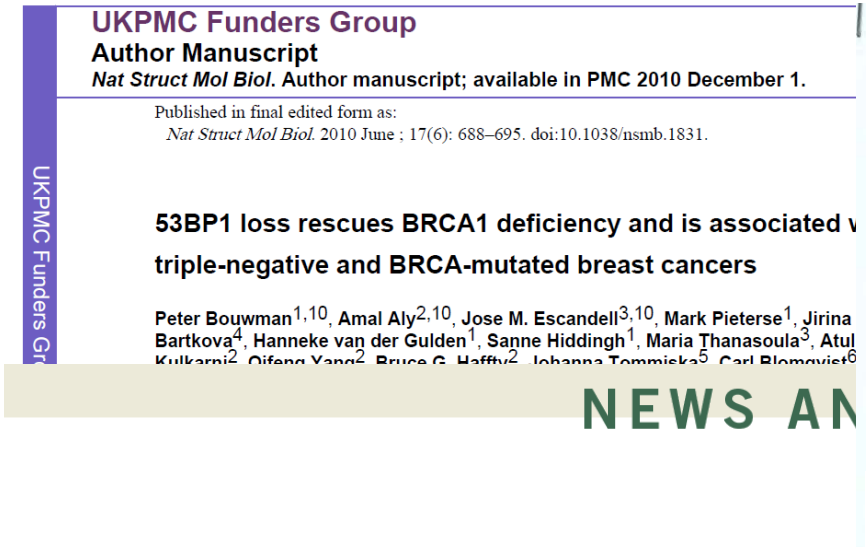
Gibault et al. AJRCMB 2009, Wojewodka et al. AJRCMB2009

Fenretinide for colonized CF patients – FDA approval for orphan drug status and clinical trial in 2012

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Selected outcomes of the project (since 2010)

Publications with IF total: >130, cummulative IF >600, average IF=5-5,5
Patents: 7 national, 6 international, 1 spin-off
9 graduated PhD. students
>100 scientists/PhD. students



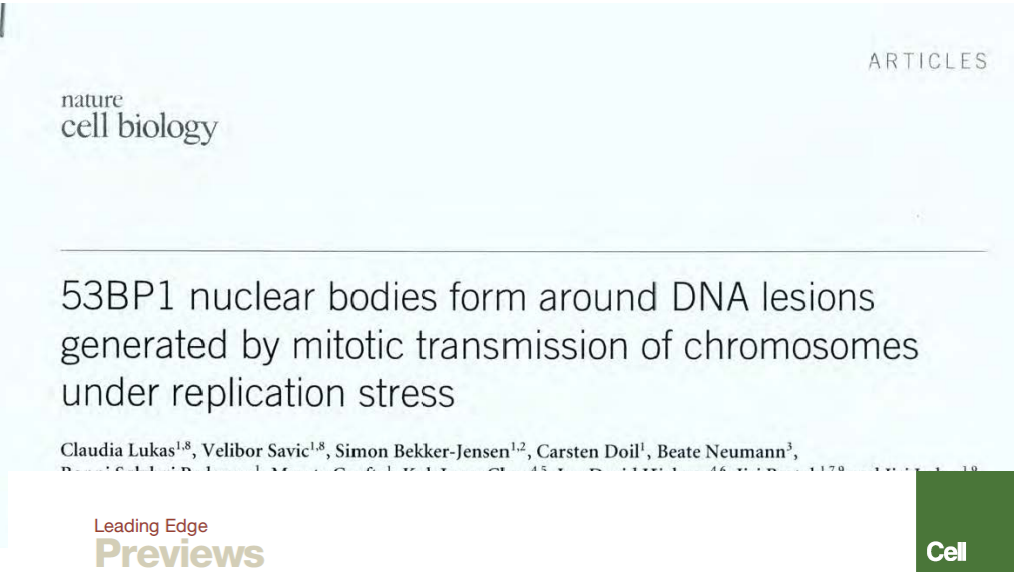
UKPMC Funders Group
Author Manuscript
Nat Struct Mol Biol. Author manuscript; available in PMC 2010 December 1.

Published in final edited form as:
Nat Struct Mol Biol. 2010 June ; 17(6): 688–695. doi:10.1038/nsmb.1831.

53BP1 loss rescues BRCA1 deficiency and is associated v
triple-negative and BRCA-mutated breast cancers

Peter Bouwman[1,10], Amal Aly[2,10], Jose M. Escandell[3,10], Mark Pieterse[1], Jirina Bartkova[4], Hanneke van der Gulden[1], Sanne Hiddingh[1], Maria Thanasoula[3], Atul Kulkarni[2], Qifeng Yang[2], Bruce G. Haffty[2], Johanna Tommiska[5], Carl Blomqvist[6]

NEWS AN

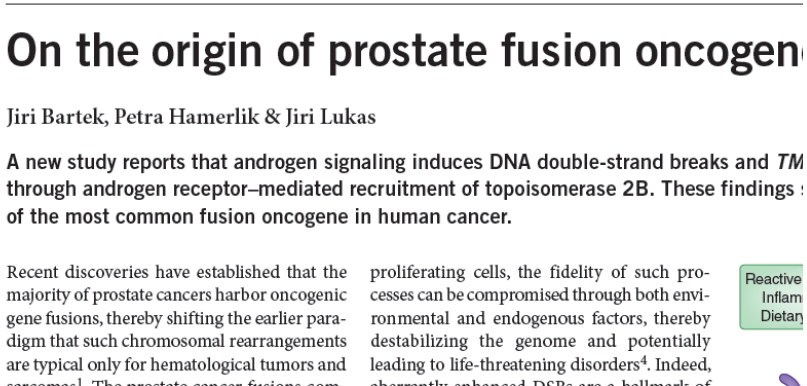


nature cell biology

ARTICLES

53BP1 nuclear bodies form around DNA lesions generated by mitotic transmission of chromosomes under replication stress

Claudia Lukas[1,8], Velibor Savic[1,8], Simon Bekker-Jensen[1,2], Carsten Doil[1], Beate Neumann[3],



On the origin of prostate fusion oncogen

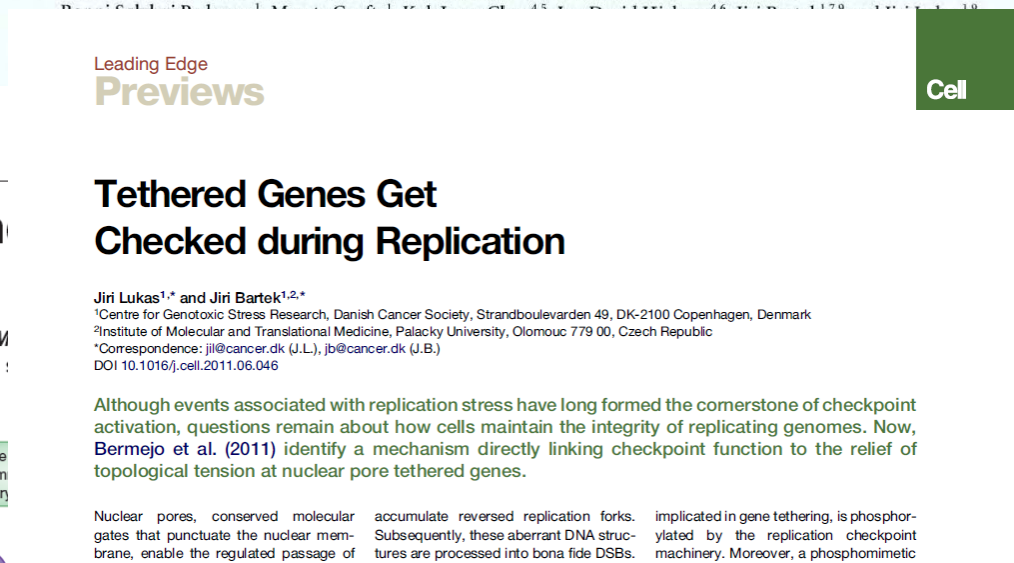
Jiri Bartek, Petra Hamerlik & Jiri Lukas

A new study reports that androgen signaling induces DNA double-strand breaks and *TM* through androgen receptor–mediated recruitment of topoisomerase 2B. These findings s of the most common fusion oncogene in human cancer.

Recent discoveries have established that the majority of prostate cancers harbor oncogenic gene fusions, thereby shifting the earlier paradigm that such chromosomal rearrangements are typical only for hematological tumors and

proliferating cells, the fidelity of such processes can be compromised through both environmental and endogenous factors, thereby destabilizing the genome and potentially leading to life-threatening disorders[4]. Indeed,

Reactive
Inflam
Dietary



Leading Edge
Previews

Cell

Tethered Genes Get Checked during Replication

Jiri Lukas[1,*] and Jiri Bartek[1,2,*]
[1]Centre for Genotoxic Stress Research, Danish Cancer Society, Strandboulevarden 49, DK-2100 Copenhagen, Denmark
[2]Institute of Molecular and Translational Medicine, Palacky University, Olomouc 779 00, Czech Republic
*Correspondence: jil@cancer.dk (J.L.), jb@cancer.dk (J.B.)
DOI 10.1016/j.cell.2011.06.046

Although events associated with replication stress have long formed the cornerstone of checkpoint activation, questions remain about how cells maintain the integrity of replicating genomes. Now, Bermejo et al. (2011) identify a mechanism directly linking checkpoint function to the relief of topological tension at nuclear pore tethered genes.

Nuclear pores, conserved molecular gates that punctuate the nuclear membrane, enable the regulated passage of

accumulate reversed replication forks. Subsequently, these aberrant DNA structures are processed into bona fide DSBs.

implicated in gene tethering, is phosphorylated by the replication checkpoint machinery. Moreover, a phosphomimetic

Vklady vlastních neveřejných prostředků pracovišť UP do společných inovačních projektů s firmami

Dofinancování UP ve společných projektech	2010	2011	2012
MPO	410	900	2450
TAČR		176	1733
MV	0	0	0
MZE	104	85	1216
VTP OPPI	0	0	0
Celkem	514	1161	5399

Univerzita Palackého v Olomouci
Laboratoř experimentální medicíny, Ústav molekulární a translační medicíny LF UP

Hněvotínská 5, 775 15 Olomouc

Zkušební laboratoř č. 1308.2, akreditovaná Českým institutem pro akreditaci, o.p.s.

ilac-MRA

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obecně prospěšná společnost
110 00 Praha 1 - Nové Město, Opletalova 41
vydává

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č. **289 / 2010**
pro
zkušební laboratoř č. **1308.2**

Univerzita Palackého v Olomouci
(IČ 61989592)
Laboratoř experimentální medicíny při Dětské klinice LF UP a FN Olomouc
Puškinova 6, 775 20 Olomouc

Předmět akreditace:

Vyšetřování v oborech cytogenetiky a molekulární genetiky [Testování pro nádorovou diagnostiku, prognózu a terapii; Testování pomocí průtokové cytometrie; Testování komerčních cytogenetických a imunohistochemických diagnostických souprav] v rozsahu uvedeném v příloze tohoto osvědčení.

Jménem akreditované zkušební laboratoře jedná doc. MUDr. Marián Hajdúch, Ph.D. a za správnost protokolů odpovídají doc. MUDr. Marián Hajdúch, Ph.D., doc. Mgr. Jiří Drábek, Ph.D. a RNDr. Radek Trojanec, Ph.D.

Toto osvědčení o akreditaci vydal Český institut pro akreditaci, o.p.s. na základě posouzení splnění akreditačních kriterií podle

ČSN EN ISO/IEC 17025:2005

a po zjištění, že zkušební laboratoř je odborně způsobilá objektivně a nezávisle vykonávat činnosti uvedené v rozsahu předmětu akreditace.

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Toto osvědčení platí do: **31.03.2013**

a v plném rozsahu nahrazuje osvědčení o akreditaci vydané ČIA č. 427/2009 ze dne 13.07.2009

V Praze dne: 08.07.2010

Ing. Jiří Růžička, MBA
ředitel
Českého institutu pro akreditaci, o.p.s.

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Proti tomuto osvědčení, pokud jde o rozsah předmětu akreditace, má adresát možnost podat písemné námitky do 10 dnů od jeho převzetí. Námitky nemají odkladný účinek.

- C_SOP_01 Vyšetření cytogenetických změn metodou fluorescenční in situ hybridizace - flexibilita typu 2
- C_SOP_03 Testování kvality přímo značených DNA sond, používaných v in vitro diagnostice pro cytogenetická vyšetření
- C_SOP_04 Vyšetření ploidity, obsahu a distribuce DNA metodami průtokové cytometrie
- C_SOP_05 Vyšetření exprese antigenů a ověření kvality protilátek metodou průtokové cytometrie
- C_SOP_06 Vyšetření exprese onkoproteinů metodou nepřímé imunohistochemie
- C_SOP_07 Vyšetření exprese epiteliálních genů a onkogenů metodou reverzně-transkriptázové polymerázové řetězové reakce v reálném čase
- C_SOP_10 "Vyšetření mutací a polymorfismů genů KRAS polymerázovou řetězovou reakcí s detekcí v reálném čase

Kontakt:
Doc. MUDr. Marián Hajdúch, PhD.
e-mail: marian.hajduch@upol.cz
www.umtm.cz

Univerzita Palackého v Olomouci
Laboratoř buněčných kultur Lékařské fakulty
Hněvotínská 3, 775 15 Olomouc
Zkušební laboratoř č. 1308, akreditovaná Českým institutem pro akreditaci, o.p.s.

Biologické hodnocení prostředků zdravotnické techniky – Zkoušky cytotoxicity *in vitro*

Český institut pro akreditaci,
obecně prospěšná společnost
110 00 Praha 1 - Nové Město, Opletalova 41
vydává

OSVĚDČENÍ O AKREDITACI

č. 391 / 2009
pro
zkušební laboratoř č. 1308
Univerzita Palackého v Olomouci
(IČ 61989592)
Laboratoř buněčných kultur Lékařské fakulty
Hněvotínská 3, 775 15 Olomouc

Předmět akreditace:

Biologické hodnocení prostředků zdravotnické techniky - zkoušky cytotoxicity in vitro v rozsahu uvedeném v příloze tohoto osvědčení.

Jménem akreditované zkušební laboratoře jedná a za správnost protokolů odpovídá prof. RNDr. Jitka Ulrichová, CSc.

Toto osvědčení o akreditaci vydal Český institut pro akreditaci, o.p.s. na základě posouzení splnění akreditačních kriterií podle
ČSN EN ISO/IEC 17025:2005
a po zjištění, že zkušební laboratoř je odborně způsobilá objektivně a nezávisle vykonávat činnosti uvedené v rozsahu předmětu akreditace.

Adresát tohoto osvědčení je oprávněn používat při své činnosti v rozsahu tohoto osvědčení a po dobu jeho platnosti vedle svého názvu označení „akreditovaná zkušební laboratoř č. 1308", pokud dodržuje veškerá příslušná předpisy vztahující se k činnosti akreditované zkušební laboratoře, včetně předpisů vydaných Českým institutem pro akreditaci, o.p.s.

Prokáže-li se, že adresát tohoto osvědčení nesplní akreditační kriteria rozhodnutí pro jeho vydání a závazky podmiňující akreditaci, může Český institut pro akreditaci, o.p.s. účinnost tohoto osvědčení pozastavit nebo osvědčení o akreditaci zrušit nebo změnit.

Toto osvědčení platí do: **10.06.2014**

V Praze dne: 01.07.2009

Ing. Jiří Růžička, MBA
ředitel
Českého institutu pro akreditaci, o.p.s.

Poučení:
Proti tomuto osvědčení, pokud jde o rozsah předmětu akreditace, má adresát možnost podat písemné námitky do 10 dnů od jeho převzetí. Námitky nemají odkladný účinek.

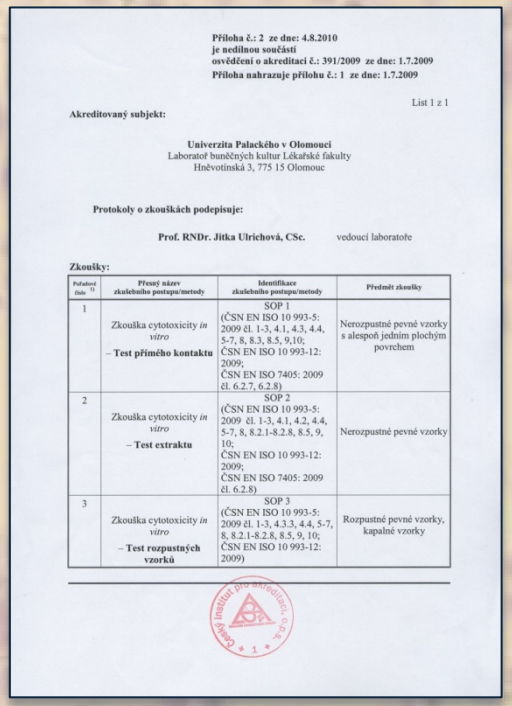
Test přímého kontaktu

Test extraktu

Test rozpustných vzorků

Kontakt:
Prof. RNDr. Jitka Ulrichová, CSc.
Vedoucí LBK LF

Tel: +420-585 632 312
Fax: +420-585 632 302
e-mail: jitka.ulrichova@upol.cz
www.medchem.upol.cz



Příloha č.: 2 ze dne: 4.8.2010
je nedílnou součástí
osvědčení o akreditaci č.: 391/2009 ze dne: 1.7.2009
Příloha nahrazuje přílohu č.: 1 ze dne: 1.7.2009

List 1 z 1

Akreditovaný subjekt:

Univerzita Palackého v Olomouci
Laboratoř buněčných kultur Lékařské fakulty
Hněvotínská 3, 775 15 Olomouc

Protokoly o zkouškách podepisuje:

Prof. RNDr. Jitka Ulrichová, CSc. vedoucí laboratoře

Zkoušky:

Pořadové číslo	Přesný název zkušebního postupu/metody	Identifikace zkušebního postupu/metody	Předmět zkoušky
1	Zkouška cytotoxicity *in vitro* – **Test přímého kontaktu**	SOP 1 (ČSN EN ISO 10 993-5: 2009 čl. 1-3, 4.1, 4.3, 4.4, 5-7, 8, 8.3, 8.5, 9,10; ČSN EN ISO 10 993-12: 2009; ČSN EN ISO 7405: 2009 čl. 6.2.7, 6.2.8)	Nerozpustné pevné vzorky s alespoň jedním plochým povrchem
2	Zkouška cytotoxicity *in vitro* – **Test extraktu**	SOP 2 (ČSN EN ISO 10 993-5: 2009 čl. 1-3, 4.1, 4.2, 4.4, 5-7, 8, 8.2.1-8.2.8, 8.5, 9, 10; ČSN EN ISO 10 993-12: 2009; ČSN EN ISO 7405: 2009 čl. 6.2.8)	Nerozpustné pevné vzorky
3	Zkouška cytotoxicity *in vitro* – **Test rozpustných vzorků**	SOP 3 (ČSN EN ISO 10 993-5: 2009 čl. 1-3, 4.3.3, 4.4, 5-7, 8, 8.2.1-8.2.8, 8.5, 9, 10; ČSN EN ISO 10 993-12: 2009)	Rozpustné pevné vzorky, kapalné vzorky

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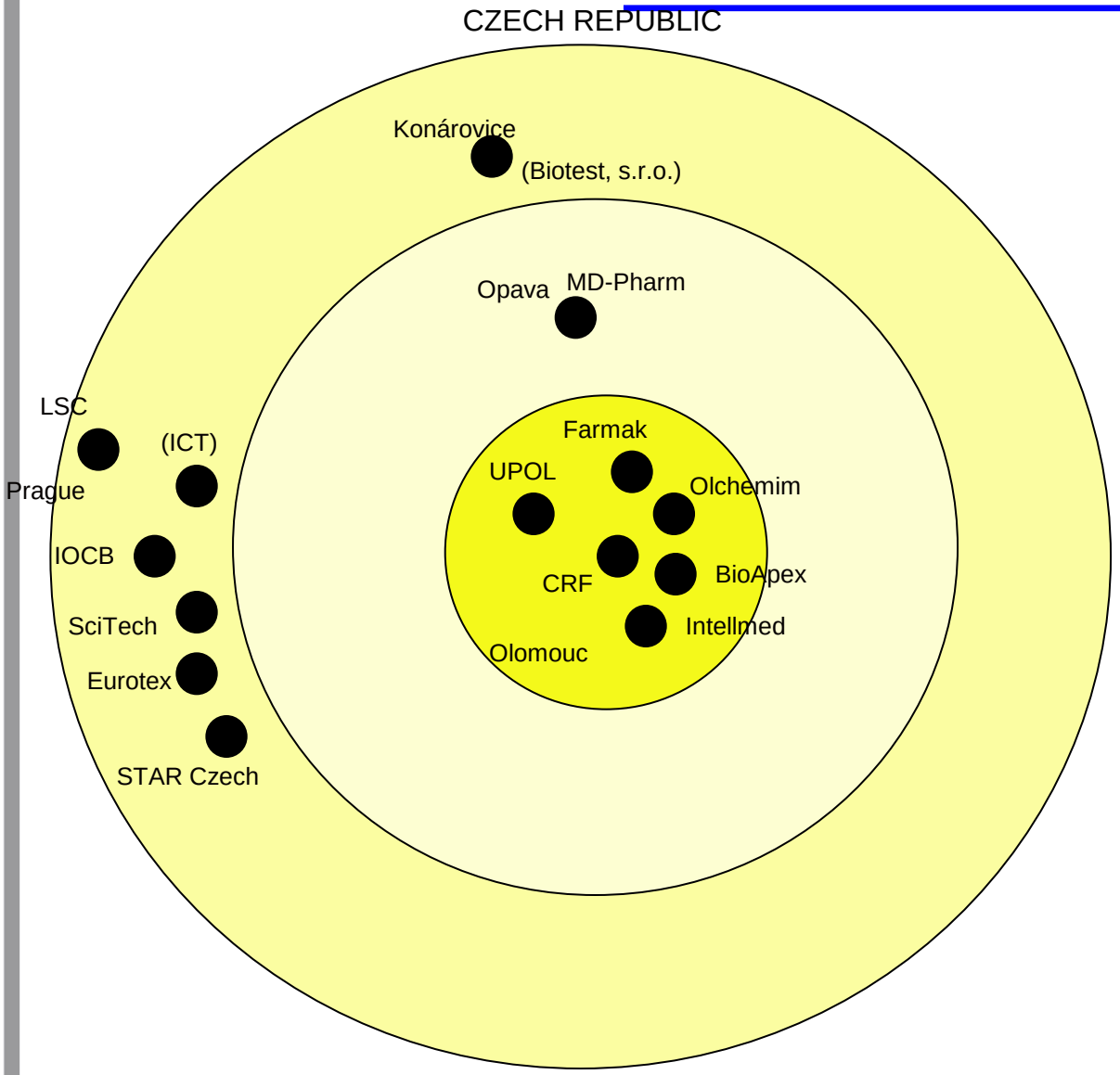
MedChemBio Cluster - www.medchembio.cz



MEMBERS

- *Academia :*
- Palacky University Olomouc
- Institute of Organic Chemistry and Biochemistry, AS CE, Prague
- Institute of Chemical Technologies, Prague

- *Small and medium size companies :*
- Quinta Analytika, s.r.o., Praha
- LSC, s.r.o., Praha
- STAR Czech s.r.o., Prague Olchemim, s.r.o., Olomouc
- MD-Pharm, s.r.o., Opava
- Sci-tech, s.r.o., Prague
- ITA-intertact, s.r.o., Olomouc
- Intellmed s.r.o., Olomouc
- Farmak, a.s., Olomouc
- Circle Line Associates, s.r.o., Prague
- BioApex, s.r.o., Olomouc
- BioPatterns, s.r.o., Olomouc
- (Biotest, s.r.o., Konárovice)

- *Others*
- ČSCH, Prague
- ČSBMB, Prague
- Cancer Research Foundation, Olomouc

Společné projekty, GMP certifikované laboratoře, sdílení databází, exportní aliance

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

GMP certifikovaná laboratoř Klastru MedChemBio

- Laboratoř poskytuje služby v oblasti kontroly jakosti léčivých přípravků, účinných látek, výchozích surovin a meziproduktů. Nabízí možnost zpracování **stabilitních studií** výše uvedených materiálů.
- Na přání zadavatelů je možno v laboratoři MedChemBio provádět **vývoj a validace analytických metod.**
- Stávající vybavení laboratoře umožňuje provádět běžné i speciální fyzikálně–chemické analýzy jako např. kapalinovou chromatografii, plynovou chromatografii, infračervenou spektroskopii, titrace a celou další škálu analytických stanovení. V laboratoři MedChemBio jsou zaměstnáni pracovníci, kteří mají dlouholeté zkušenosti s prací v režimu správné výrobní praxe ve farmaceutickém průmyslu.
- Laboratoř disponuje **povolením** Ministerstva zdravotnictví ČR pro zacházení **s prekursory návykových látek.**

Přehled služeb nabízených laboratoří MedChemBio:

- analýzy na HPLC
- analýzy na UPLC
- analýzy na GC s možností head space
- stabilitní studie
- měření na IR spektrofotometru
- stanovení vody dle K.F.
- potenciometrické titrace
- měření pH/konduktivity
- ztráta sušením
- síranový popel
- další běžná laboratorní měření dle Evropského lékopisu (čirost, barevnost, atd.)

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

EATRIS-CZ

National Road Map of Large Infrastructures

Project Leader:
Palacký Universty in Olomouci
Project BIOMEDREG – Institute of Molecular and Translational Medicine

Partners:
Academic Institutions – call in September 2012

Allocation:
Approx. 0,5 M € in Construction Phase

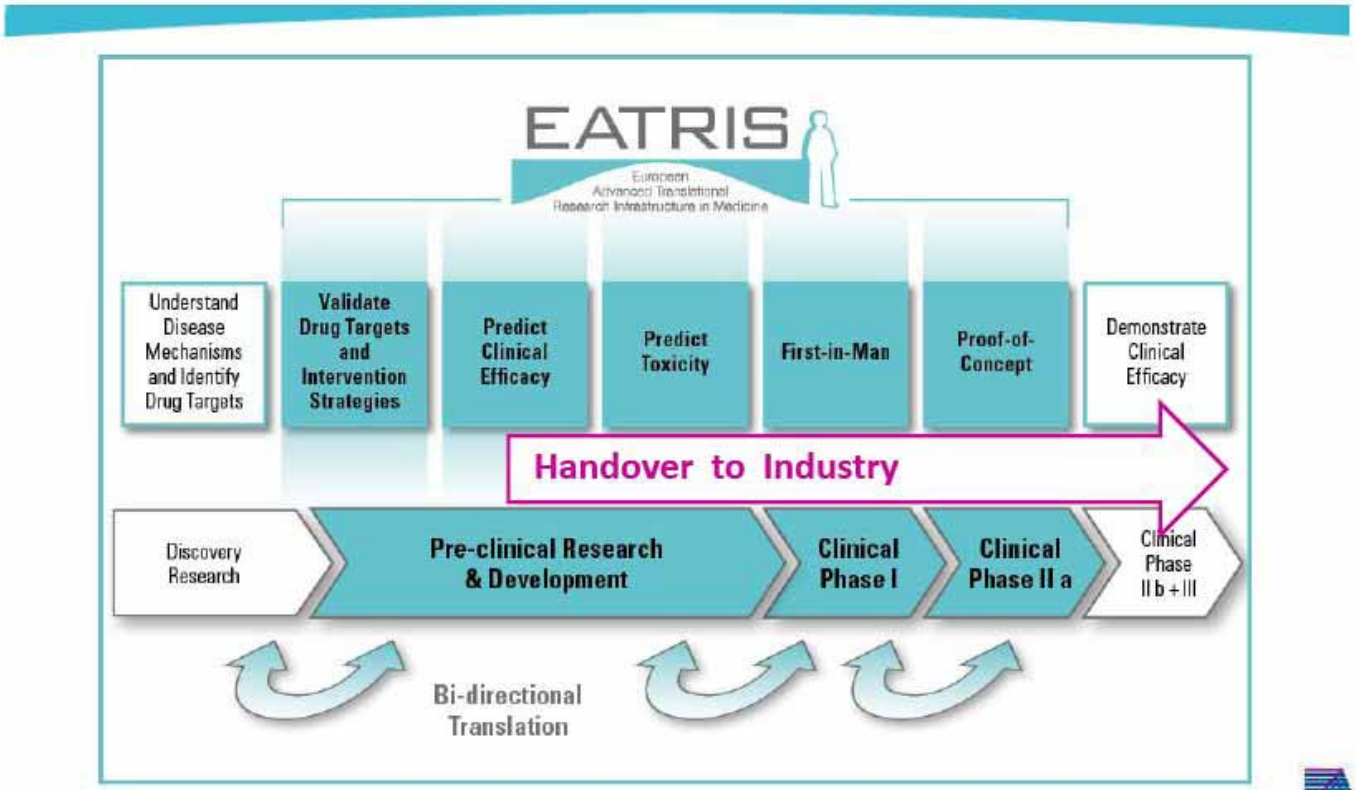
Phase of the Project:
On the Roadmap since March 15, 2010, signing of Memorandunm of Understandidng in 2011 – transient phase, ERIC till the end of 2012.

Information:
www.umtm.cz www.biomedreg.eu (infrastructure is under construction since April 1, 2010)

ESFRI – EATRIS - ERIC

ESFRI - European Strategy Forum on Research Infrastructures
EATRIS - European Advanced Translational Research InfraStructure in Medicine
ERIC - Legal Framework for a European Research Infrastructure Consortium

Infrastructure for Pipeline



BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Center for Development of Original Drugs - CDOD

The project **Center for Development of Original Drugs** (**CDOD**) in its strategic plan develops traditionally successful fields of Czech science and research: medicinal and pharmaceutical chemistry, pharmacology, pharmacochemistry, and other fields. The mission of **CDOD** project is commercialization and practical application of results of the basic research in the area of development of original drugs.

Technology Agency of the Czech Republic

Centra kompetence

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

Center for Development of Original Drugs - CDOD

Příjemce:
Ústav organické chemie a biochemie AVČR, v.v.i.

Spoluřešitelé:
Ústav molekulární a translační medicíny LF UP v Olomouci
Vysoká škola chemicko-technologická v Praze
Fyziologicky ústav, AVČR, v.v.i.
Ústav experimentální medicíny, AVČR, v.v.i.
BioTest s.r.o.
APIGENEX s.r.o.
QUINTA-ANALYTICA s.r.o.
IOCB TTO s.r.o.

Technology Agency of the Czech Republic

Centra kompetence

BIOMEDREG INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

For Investors: Why Palacký University in Olomouc?

- Strong biomedical, biotechnology and material sciences research, common research interests
- Friendly legislation on genetic testing and prenatal genetic diagnostics
- Large University Hospital with all necessary medical fields
- Established collaboration with supercomputing center in Ostrava (IT4 Innovations)
- Human resources are not exploited
- Strong language education, including Chinese and Japanese, Confucius Institute
- Logistics: In the middle of Central Europe, main railway cross, vicinity of Ostrava, Brno, Bratislava and Vienna airports (daily serving DHL)
- Reasonable living costs
- Largest Technology park in the Czech Republic (950 000 m^2) – Memorandum of Understanding – National Biomedical and Biotechnology Park.

Region		Parking time for 40 CZK (approx. 1,6 €) in hours	General unemployment rate, total (%)	Population	Educational attainment-higher education	% of People with Higher Education in Total Population	Higher education-universtities students with the Czech citizenship	% of Students in Total Population	R&D personnel, total	% of R&D personnel in Total Population	R&D Intensity*
Prague		0,5	3,8	1 257 158	317 400	25	50 912	4,0	19 963	1,59	0,32
South Moravian Region including Brno		1	7,7	1 154 654	162 300	14	40 076	3,5	8 732	0,76	0,18
Hradec Králové Region including Hradec Králové		NA	6,9	554 803	55 600	10	18 235	3,3	1 807	0,33	0,16
Moravian-Silezian Region including Ostrava		NA	10,2	1 243 220	132 000	11	46 656	3,8	3 459	0,28	NA
Olomouc Region including Olomouc		12	9,1	641 681	57 400	9	23 397	3,6	2 110	0,33	0,11
ČSÚ: <http://www.czso.cz/csu/2012edicniplan.nsf/p/4027-12>											
* According to NUTs - Technopolis Report http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/evalstrat_innov/czechrepublic.pdf											

BIOMEDREG

INSTITUTE OF MOLECULAR AND TRANSLATIONAL MEDICINE

THANK YOU FOR ATTENTION

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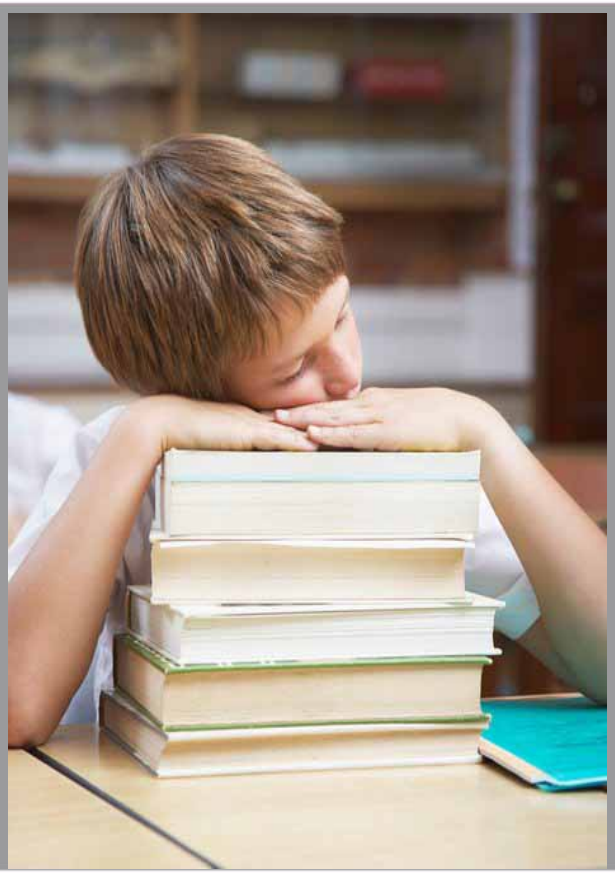
www.imtm.cz/www.umtm.cz
www.medchembio.cz



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