



# Medicinal Chemistry

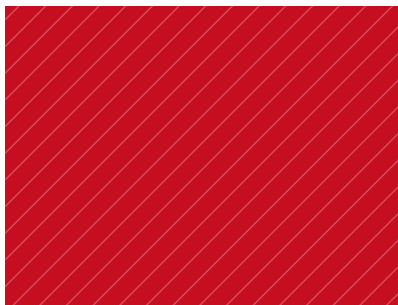
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## THEMATIC RESEARCH FOCUS >

### RESEARCH AREA

- » Organic synthesis
- » Medicinal chemistry
- » Photochemistry
- » Supramolecular chemistry

### EXCELLENCE

- » New organic compounds with targeted biological activity

### MISSION

- » Internationally competitive research producing results attractive for further progression within the biotech sector

## DEVELOPED TECHNOLOGIES >

### CONTENT OF RESEARCH

- » Synthesis and development of patentable, biologically active organic compounds that can serve as leads for further (commercial) progression; focus on the area of cancer treatment

### MAIN CAPABILITIES

- » Design, synthesis and characterization of organic compounds and their profiling in biological assays

## FIELDS OF RESEARCH RESULTS APPLICATION

### Basic research

- » Discovery of new activity modulators of biological targets relevant in the treatment of cancer

### Application research + protection forms

- » Patented biologically active compounds - within the framework of research at Schering-Plough Corp. / Merck
- » Two discovered compounds currently profiled in clinical trials

## ALUMNI PROFILE

Alumni are capable of synthesis, purification and characterization of organic compounds (whose complexity will depend on the academic degree obtained). In addition, they will be familiar with basic concepts and methods of biology and biochemistry and will be capable of fruitful interaction with biologists within the framework of the medicinal programmes of choice.

## NUMBER OF RESEARCH POSITIONS >

### SENIOR RESEARCH STAFF

1

### JUNIOR RESEARCH POSITIONS (INCL. PH.D. STUDENTS)

6



## KEY RESEARCH EQUIPMENT ↘

### LIST OF DEVICES

- » NMR (Bruker Avance 300 MHz)
- » X-ray diffractometer (KM4CCD, Oxford Diffraction, Abingdon, UK)
- » MS-TOF (Agilent 6224 Accurate Mass TOF)
- » GC/MS (Shimadzu GC17A, Shimadzu GC2010; Shimadzu GC MS – QP 2010)
- » IR (Genesis series IR ATI Mattson)
- » UV/VIS (Shimadzu UV-1602)
- » Polarimeter (JASCO-Autopol III)
- » HPLC (Shimadzu LC-10AD with JASCO CD-1595 CD/UV detector and Shimadzu LC-10AD with Shimadzu SPD-M10A diode array detector)

## BUDGET ↘

### TOTAL (MIL. CZK/ MIL. EUR)

16 / 0.64

### PART OF THE TOTAL BUDGET FROM PRIVATE RESOURCES (%)

5

### PART OF THE TOTAL BUDGET FROM FOREIGN RESOURCES (%)

80

## MAIN PROJECTS ↘

**2011-2015:** Center for Biological and Cellular Engineering (CBCE)- research platform of FNUSA-ICRC project

**2010-2013:** Biologically Active Organic Compounds Interacting with Adenine-binding Proteins (project 230936 financed by FP7-PEOPLE-2009-RG Marie Curie Action)

**2010-2012:** Nucleoside Analogs with Targeted Biological Activity (project SRGA 771 financed by programme SoMoPro - Reintegration Grants, European Commission and South Moravian Region)

**2010-2012:** Molecular and supramolecular building blocks for nanostructured materials (MOSTNAMAT) (financed by Masaryk University)

### ACHIEVEMENTS

- » Discovery of SCH 727965 (dinaciclib) - potent and selective CDK inhibitor; currently in Phase II clinical trials
- » Discovery of SCH 900776 - functionally selective inhibitor of CHK1 kinase; currently in Phase I/II clinical trials
- » Schering-Plough President's Award 2004: Discovery of the cyclin-dependent kinase inhibitor SCH 727965: A comprehensive strategy for the identification of targeted cytoreductive agents

## MAIN COLLABORATING PARTNERS ↘

### COLLABORATION WITH ACADEMIC PARTNERS

- » CBCE/ICRC/Mayo Clinic (CZ/US)
- » Columbia University (US)
- » Karolinska Institutet (SE)
- » Kobe-Gakuin University (JP)

### COLLABORATION WITH COMPANIES

- » Apigenex (Prague, CZ)

## EXPECTATIONS ↘

### REQUIREMENTS

Collaborating partner ideally having the ability to profile biologically active compounds in a pre-clinical (and potentially clinical) setting in proper in vitro and in vivo screenings of choice that are beyond the scope of academic institutions.

### OFFERS

- » Design and synthesis of organic compounds and (in the laboratories of the cooperating biologists) their profiling in screenings containing normal somatic cells, cancer cells, cancer stem cells, and human embryonic stem cells