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Erasmus International Staff Week

Université de Liège, May 2017

Jan Skupa

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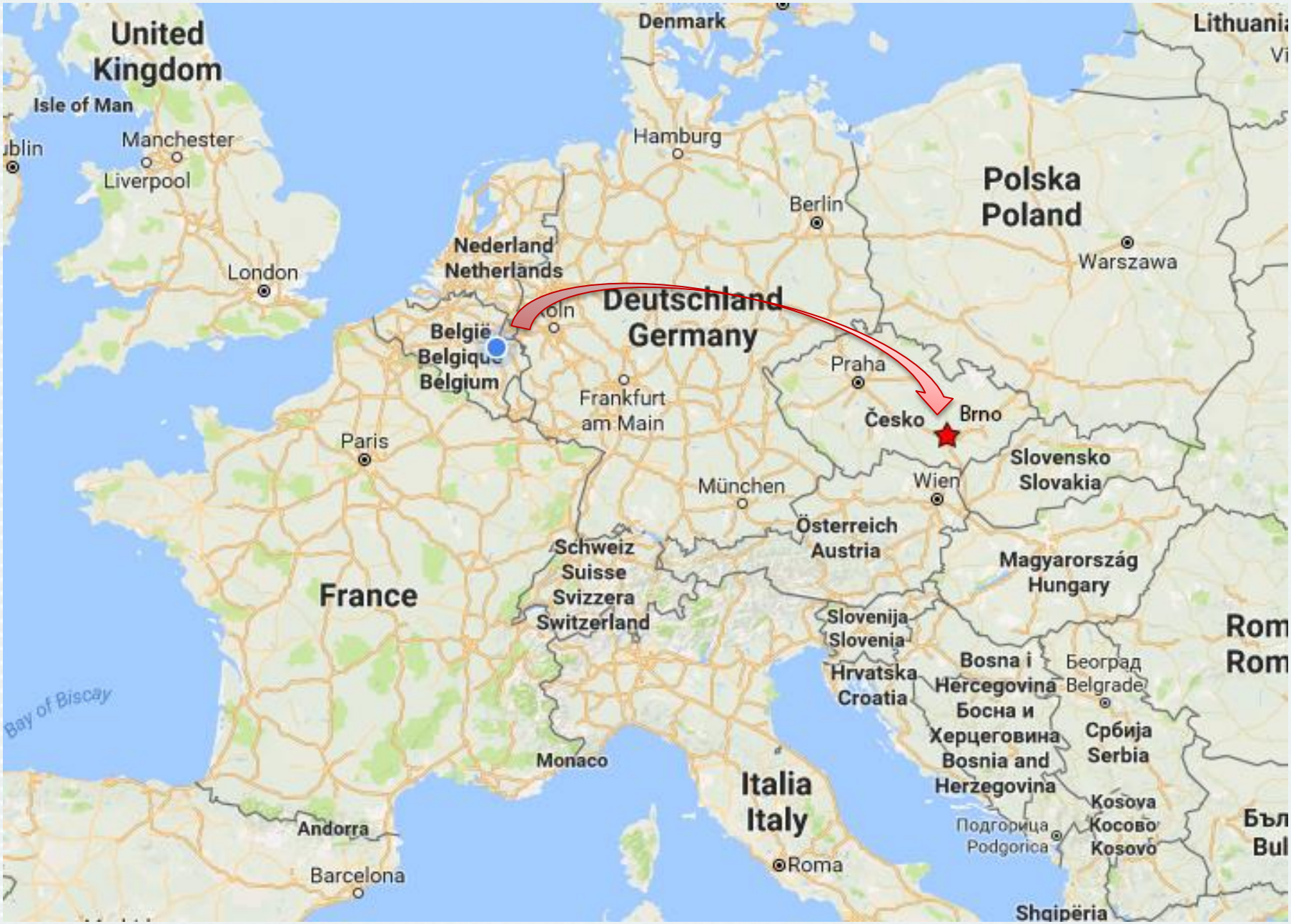
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General information

founded 1899

Largest technical university

8 faculties

22000 students

Institutional repository

BUT Digital library

2008-2011 DigiTOOL

From 2012 Dspace (now v5.3)

https://dspace.vutbr.cz

At first only for thesis

(must be publicly access by law)

Other records

Journals (2300 articles)

Conference papers (700 papers)

Research articles

2013 – signing Berlin declaration

– Open access policy

(but not mandatory!)

Research articles

DSpace is connected to internal information system

Reporting is mandatory (R&D evaluation)

Upload fulltext is only few steps

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Staphylococcus aureus and MRSA Growth and Biofilm Formation after Treatment with Antibiotics and SeNPs

Methicillin-resistant Staphylococcus aureus (MRSA) is a dangerous pathogen resistant to -lactam antibiotics. Due to its resistance, it is difficult to manage the infections caused by this strain. We examined this issue in terms of observation of the growth properties and ability to form biofilms in sensitive S. aureus and MRSA after the application of antibiotics (ATBs)—ampicillin, oxacillin and penicillin—and complexes of selenium nanoparticles (SeNPs) with these ATBs. The results suggest the strong inhibition effect of SeNPs in complexes with conventional ATBs. Using the impedance method, a higher disruption of biofilms was observed after the application of ATB complexes with SeNPs compared to the group exposed to ATBs without SeNPs. The biofilm formation was intensely inhibited (up to 99% ± 7% for S. aureus and up to 94% ± 4% for MRSA) after application of SeNPs in comparison with bacteria without antibacterial compounds whereas ATBs without SeNPs inhibited S. aureus up to 79% ± 5% and MRSA up to 16% ± 2% only. The obtained results provide a basis for the use of SeNPs as a tool for the treatment of bacterial infections, which can be complicated because of increasing resistance of bacteria to conventional ATB drugs.

Stafylokoky rezistentní Staphylococcus aureus (MRSA) je nebezpečný patogen odolný vůči beta-laktamová antibiotika. Vzhledem ke své odolnosti, je obtížné řídit infekcí způsobených tímto kmenem. Zkoumali jsme tento problém, pokud jde o sledování růstových vlastností a schopnosti vytvářet biofilmů v citlivých S. aureus a MRSA po aplikaci antibiotik (ATBs) -ampicilinu, oxacilin a penicilin a komplexy selenu nanočástic (SeNPs) s těmito ATBs , Výsledky naznačují silnou inhibiční účinek SNP v komplexy s běžnými ATBs. Při použití metody impedanční, byla pozorována vyšší narušení biofilmů po aplikaci ATB komplexů s SeNPs ve srovnání se skupinou vystavenou ATBs bez SeNPs. Tvorba biofilmu byla intenzivně inhibována (až o 99% ± 7% pro S. aureus, a až 94% ± 4% pro MRSA) po aplikaci SeNPs ve srovnání s bakteriemi bez antibakteriálních sloučenin, zatímco ATBs bez SeNPs inhibuje S. aureus až pouze 79% ± 5% a MRSA až o 16% ± 2%. Získané výsledky poskytují základ pro využití SeNPs jako nástroj pro léčení bakteriálních infekcí, které mohou být komplikované, protože zvýšení odolnosti bakterií konvenčních ATB léčiv.

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150 fulltext (but 60 only for this year)

Promoting OA

OA initiative CZ

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Foreword by Peter Suber

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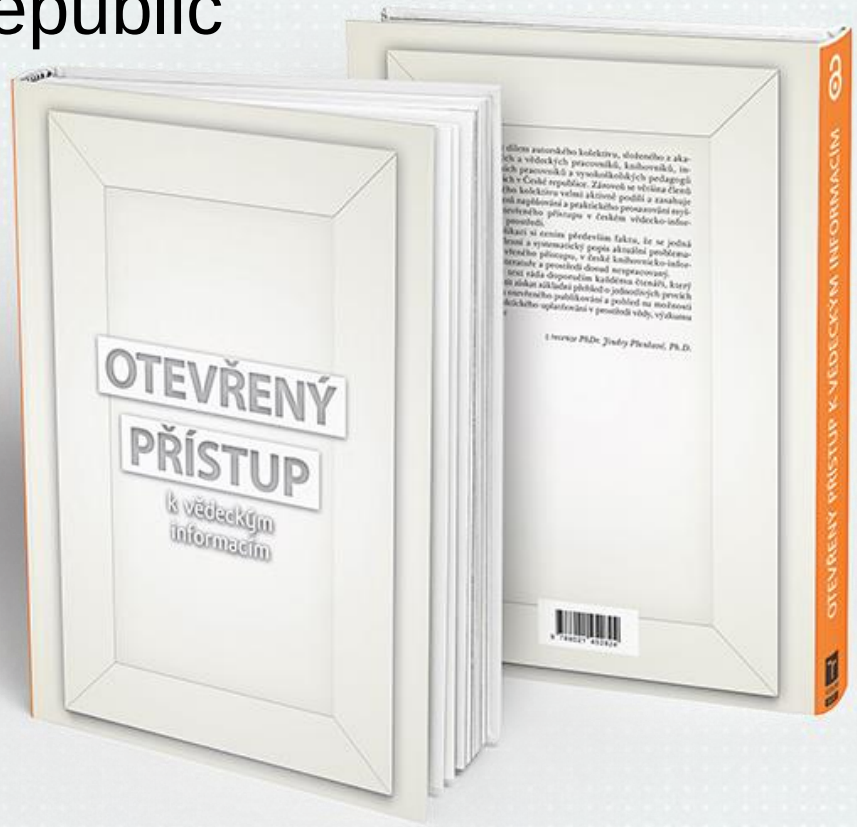

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