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| **PLANO DA DISCIPLINA**  **DISCIPLINA – Trends in Nanotechnology Applied to Health Sciences**  **Semestre 2017.1 – 9 a 13 de Janeiro** | | | | |
| **Carga Horária: 30 horas** | | **Créditos: 2 creditos** | | |
| **Local:** | Auditório do CCS-UFRN (Faculdade de Farmácia) | | | |
| **DOCENTES:** | | | | **CH** |
| Eryvaldo Socrates Tabosa do Egito | | |  | **10** |
| Elias Fattal | | |  | **10** |
| Adriana Raffin Pohlman | | |  | **05** |
| Silvia S. Guterres | | |  | **05** |
| **01 – OBJETIVO** | | | | |
| Apresentar aos alunos de pós-graduação avanços em nanotecnologia: principalmente nanomedicamentos. | | | | |
| **02 – EMENTA** | | | | |
| A disciplina tem por objetivo transmitir aos discentes os conhecimentos referentes a nanomedicamentos e suas aplicações. Será dada ênfase para o uso destes sistemas na terapia de combate ao câncer, como instrumento de diagnóstico por imagem e ainda como agentes promissores para a liberação pulmonar de fármacos. A toxicidade dos sistemas nanoestruturados também será enfatizada nesta disciplina. | | | | |
| **03 – CONTEÚDO PROGRAMÁTICO** | | | | |
| - Nanomedicine technology: current achievements and new trends.  - Pulmonary drug delivery systems: Trojan microparticles, macrofage uptakes,  - Nanomedicines in cancer therapy: cationic nanoemulsion, Hyaluronic acid for anticancer drug and nucleic acid delivery; Aqueous-core PEG-coated PLA nanocapsules for an efficient entrapment of water soluble anticancer drugs. Functionalizing liposomes with anti-CD44 aptamer for selective targeting of cancer cells  - Nanosystems for imaging: Nanotheranostics, Perfluorocarbon-loaded micro and nanosystems for medical imaging  - Nanotoxicity: Lung Toxicity of Biodegradable Nanoparticles, Surface-modified biodegradable nanoparticles impact on cytotoxicity and inflammation response on a co-culture of lung epithelial cells and human-like macrophages, Compared in vivo toxicity in mice of lung delivered biodegradable and non-biodegradable nanoparticles | | | | |
| **04 - -METODOLOGIA DE TRABALHO** | | | | |
| O conteúdo programático será desenvolvido através de **aula teórica** expositiva com participação e discussão dos alunos. | | | | |
| **05 – AVALIAÇÃO-** | | | | |
| A avaliação será realizada através da análise da participação e discussão dos alunos no decorrer da aula e análise de artigo científico. | | | | |

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| 1. **- REFERÊNCIAS** |
| 1. Grabowski N., Hillaireau H., Vergnaud J., Fattal E., Evaluation of lung toxicity of nanoparticles, In Targeted Drug Delivery : Concepts and Design; Devarajan P. V., Jain S., Springer, 689-732, (2015). 2. Vauthier C., Couvreur P., Fattal E. Nanomaterials: Applications in Drug Delivery In Nanomaterials: A Danger or a Promise? A Chemical and Biological Perspective. Editors: Brayner R., Fiévet F., Coradin T., Springer, 131-151, (2013) 3. Claude J.-R. and Members of Afssaps Working Party Recommendations for Toxicological Evaluation of Nanoparticle Medicinal Products International Pharmaceutical Product Registration Anthony C. Cartwrightand Brian R. Matthews Eds, 755, (2009). 4. Fattal E., De Rosa G. Polymeric nano and microparticles for the delivery of antisense oligonucleotides and siRNA, Smyth Templeton N. Ed, CRC Press, Boca Raton, USA, 599-615, (2009). 5. Fattal, E., Tsapis, N., Nanomedicine technology: current achievements and new trends. Clinical and Translational Imaging, 2(1), 77-87, 2014. 6. Fattal, E., Grabowski, N., Mura, S., Vergnaud, J., Tsapis, N., Hillaireau, H., Lung Toxicity of Biodegradable Nanoparticles. Journal of Biomedical Nanotechnology, 10(10), 2852-2864, 2014. 7. Dosio F., Arpicco S., Stella B., Fattal E. Hyaluronic acid for anticancer drug and nucleic acid delivery Advanced Drug Delivery Reviews, 97,204-236, 2016. 8. Grabowski, N., Hillaireau, H., Vergnaud, J., Nicolas V., Tsapis, N., Kerdine-Romer S., Fattal, E., Surface-modified biodegradable nanoparticles’ impact on cytotoxicity and inflammation response on a co-culture of lung epithelial cells and human-like macrophages. Journal of Biomedical Nanotechnology, 12, 135-146, 2016. 9. Pham D, Fattal E, Tsapis N. Pulmonary drug delivery systems for tuberculosis treatment. International Journal of Pharmaceutics. 478(2):517-29, 2015. |

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| 1. **- CRONOGRAMA** | | |
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| **09/01/2017** | Introduction to nanomedicines | Prof. Elias Fattal |
| **09/01/2017** | Pulmonary drug delivery systems |  |
| **10/01/2017** | Nanomedicines in cancer therapy |  |
| **11/01/2017** | Nanosystems for imaging |  |
| **11/01/2017** | Nanotoxicity |  |
| **12/01/2017** | Estrutura química e funcionalização de superfície de nanocápsulas de núcleo lipídico | Prof. Adriana Pohlman |
| **13/01/2017** | Inovando com o uso da nanotecnologia: exemplos em medicamentos e cosméticos | Prof. Sílvia Guterres |