



<b>Laboratory Name</b>	PharmSci Lab – Innovative Solutions in Pharmaceutical Sciences	
<b>Main Goals</b>	Innovative solutions in Pharmaceutical Sciences, covering areas such as development of medicines for children and the elderly, evaluation and improvement of the taste of medicines, compounding and 3D printing of personalized medicines, dietary supplements, crenotherapy / hydropinie, medication review, applied microbiology, among others.	

<b>Lab Head</b>	Ana Isabel Fernandes, PhD
<b>Group</b>	<p><b>Senior researchers</b></p> <p>Ana Isabel Fernandes (PhD) Alexandra Figueiredo (PhD) Deolinda Auxtero (PhD) Guilhermina Martins Moutinho (PhD) Isabel Margarida Costa (PhD) Gabriela Garrastazu Pereira (PhD) Ricardo Pais (PhD)</p> <p><b>Junior researchers</b></p> <p>Sara Figueiredo (PhD student) Nuno Venâncio (MICF student)</p>
<b>Research Projects (main from 2016)</b>	<ol style="list-style-type: none"><li>1. Medicinal powdered milk for oral administration of drugs in pediatrics (MedMilk) – PTDC / DTP-FTO / 1057/2012.</li><li>2. Production of micro and nanoparticles of co-amorphous materials with therapeutic activity using supercritical fluids embedded in extrudates for transdermal or oral administration (NanoCoAm) – PTDC/CTM-BIO/3946/2014.</li><li>3. Sterilization of clinically active hydrogels: searching for effective strategies (STEReoSTRAT) – PTDC/CTM-BIO/3640/2014.</li><li>4. Additive production of personalized medicines by three-dimensional printing (PrintMed) – PTDC/CTM-CTM/30949/2017.</li></ol>



	<ol style="list-style-type: none"><li>5. Medicines and dietary supplements in performance consumptions: social practices, contexts and literacy (ConPerLit) – PTDC-SOC-SOC-30734-2017.</li><li>6. Influence of cultural and socioeconomic factors on acceptance of the drug administration route and adherence to therapy.</li><li>7. Evaluation of vitamins and minerals content in dietary supplements.</li><li>8. Evaluation of hypocholesterolemic potential of the hyperthermal waters of Chaves.</li><li>9. Effect of ingestion of encapsulated coffee on the glycemia of healthy subjects.</li><li>10. Harmonization of external quality assessment programs in the area of parasite morphology.</li><li>11. Pesquisa e identificação de alérgenos alimentares (lactose, glúten, proteína leite de vaca) em medicamentos.</li><li>12. ECOS – Efeito COVID-19 na Saúde em Portugal</li><li>13. Estudos epidemiológicos e desenvolvimento de ferramentas computacionais para o controlo da pandemia por COVID-19.</li><li>14. Desenvolvimento de um algoritmo não invasivo de seleção de embriões viáveis e euplóides usando dados de espectrometria de massa (MALDI).</li><li>15. Desenvolvimento de algoritmos para <i>screening</i> populacional com vista a deteção precoce do cancro do ovário baseado em espectrometria de massa de amostras de plasma sanguíneo.</li></ol>
<b>Equipment/ Techniques</b>	Electrophoresis, Blotting, ELISA, Freeze-drying, Electronic Tongue (ASTREE), 3D Printing (fused deposition modeling and powder deposition method).
<b>Partners (National and International)</b>	FFUL, IST - ULisboa, PT ISCTE - IUL, PT HGO, Almada, PT Termas - Município de Chaves, PT Lab. Análises Clínicas Dr. Joaquim Chaves, PT INSA, PT LEF, PT UCL School of Pharmacy, UK
<b>Community interaction</b>	HGO; LEF and Termas de Chaves



**Advanced training  
(selected, from  
2016)**

- Setoca B. 'Food supplements in the prevention and treatment of urinary infections' (2020)
- Costa AF. 'Production of medicines by 3D printing' (2020)
- Excipients in medicines and cow milk protein allergy: analysis of summaries of product characteristics (2020)
- Pacheco J. 3D Bioprinting: an alternative animal experimentation in pharmacotoxicology (2020)
- Moral J. *Toxoplasma gondii* and toxoplasmosis; epidemiologic situation of the pathology, nature, diagnostic and novel treatments (2020)
- Neves I. 'Supplementation with vitamin D' (2019)
- Inez R. 'Labeling vs DDR of food supplements in vitamin containing liquid formulas' (2019)
- Fragoso E. 'Effects of long-term use of proton pump inhibitors' (2019)
- Machado S.C. 'Nanotechnology application in oncological therapeutics' (2018)
- Caetano C. 'Immunotherapy in breast cancer' (2018)
- Santos T. 'Dengue virus' infection: phytotherapy as treatment and prophylaxis' (2018)
- Barros R. 'Compounding in Portuguese community pharmacies' (2018)
- Contente B. 'Anti-cellulite products: topical or oral?' (2017)
- Coelho P. 'Therapeutic use of Helminths' (2017)
- Lopes A.R. 'Drugs that affect vocal quality' (2017)
- Sustelo A.C. 'New therapeutic approaches in polycystic ovarian syndrome' (2017)
- Serrano A.V. 'Medical applications of polymeric nanoparticles' (2017)
- Costa T. 'Solid lipid nanoparticles in drug delivery' (2016)
- Borges M. 'Micelar drug delivery' (2016)
- Coelho A.R. 'Pharmacokinetics of geriatry' (2016)
- Bastos A.C. 'Alternative therapies for cholesterol reduction as a cardiovascular risk factor' (2016)
- Costa B. 'Outpatient anticoagulation: old and new oral anticoagulants' (2016)
- Mesquita L. 'Hormonal contraceptive methods' (2016).



**Publications  
(selected, from  
2016)**

1. Auxtero MD, Chalante S, Abade MR, Jorge R, Fernandes AI (2021). Potential Herb-Drug Interactions in the Management of Age-Related Cognitive Dysfunction. *Pharmaceutics*, 13(1), 124. DOI: 10.3390/pharmaceutics13010124
2. Massarelli E., Silva D., Pimenta A.F.R., Fernandes A.I., Mata J.L. G., Armês H., Salema-Oom M., Saramago B., Serro A. P. (2021). Polyvinyl alcohol/chitosan wound dressings loaded with antiseptics. *International Journal of Pharmaceutics*, 593, 120110. DOI: 10.1016/j.ijpharm.2020.120110
3. Silva D., de Sousa H.C., Gil M.H., Santos L.F., Moutinho M.G., Salema-Oom M., Alvarez-Lorenzo C., Serro A.P., Saramago B. (2020) Diclofenac sustained release from sterilised soft contact lens materials using an optimised layer-by-layer coating. *International Journal of Pharmaceutics*, 05 Jun 2020, 585:119506. DOI: 10.1016/j.ijpharm.2020.
4. Pais RJ, Taveira N (2020). Predicting the evolution and control of the COVID-19 pandemic in Portugal. *F1000 Research*. DOI:10.12688/f1000research.23401.1
5. da Costa N.F., Fernandes A.I., Pinto J.F. (2020) Measurement of the amorphous fraction of olanzapine incorporated in a co-amorphous formulation. *International Journal of Pharmaceutics*, 588, 119716. DOI:10.1016/j.ijpharm.2020.119716.
6. Pereira G.G., Figueiredo S., Fernandes A.I., Pinto J.F. (2020) Polymer Selection for Hot-Melt Extrusion Coupled to Fused Deposition Modelling in Pharmaceutics, *Pharmaceutics* 12(9):795. DOI: 10.3390/pharmaceutics12090795.
7. Pais RJ, Iles RK, Zmuidinaite R (2020). MALDI-ToF Mass spectra phenomic analysis for human disease diagnosis enabled by cutting-edge data processing pipelines and bioinformatic tools. *Current Medicinal Chemistry*, 27: 1. DOI:10.2174/0929867327666201027154257
8. Figueiredo A, Costa IM, Fernandes TA, Gonçalves LL, Brito J (2020). Food Supplements for Weight Loss: Risk Assessment of Selected Impurities. *Nutrients* 2020, 12, 954. DOI:10.3390/nu12040954
9. Pais RJ (2020). Simulation of multiple microenvironments shows a pivot role of RPTPs on the control of Epithelial-to-Mesenchymal Transition. *Biosystems*, Volume 198,104268. <https://doi.org/10.1016/j.biosystems.2020.104268>.
10. Pais RJ, Sharara F, Zmuidinaite R. et al. (2020). Bioinformatic identification of euploid and aneuploid embryo secretome signatures in IVF culture media based on MALDI-ToF mass spectrometry. *J Assist Reprod Genet* 37, 2189–2198. <https://doi.org/10.1007/s10815-020-01890-8>
11. Silva D., Sousa H.C., Gil M.H., Santos L.F., Moutinho M.G., Serro A.P., Saramago B. (2018) Antibacterial layer-by-layer coatings to control drug release from soft contact lenses material, *International*



Journal of Pharmaceutics 553(1-2) 186-200.  
DOI: 10.1016/j.ijpharm.2018.10.041.

12. Costa I.M., Figueiredo M.A., Moutinho G.M., Auxtero D. (2018) Vitamin content in food supplements: are we getting what we need? *Acta Portuguesa de Nutrição*, 13, 48-87.  
DOI: 10.21011/apn.2018.1301
13. Auxtero D., Costa I.M., Proença L., Carneiro F., Vicente A., Cardoso S. (2018) Hypocholesterolemic effect of Chaves hyperthermal spring water: a pilot study, *Annals of Medicine*, 50:sup1, S122-123.  
DOI: 10.1080/07853890.2018.1427445
14. Fernandes T.A.P., Aguiar J.P., Fernandes A.I., Pinto J.F. (2017) Quantification of theophylline or paracetamol in milk matrices by high-performance liquid chromatography. *Journal of Pharmaceutical Analysis* 7(6): 401-405. DOI: 10.1016/j.jpha.2017.07.005.
15. Aguiar J.P., Fernandes T.A.P., Nese C., Fernandes A.I., Pinto J.F. (2017) Production and characterization of spray-dried theophylline powders prepared from fresh milk for potential use in paediatrics. *Journal of Pharmacy and Pharmacology* 69: 554-566.  
DOI:10.1016/j.jpha.2017.07.005. Epub August 2016
16. Pinto J.T., Brachkova M.I., Fernandes A.I., Pinto J.F. (2016) Evaluation of the ability of powdered milk to produce minitables containing paracetamol for the paediatric population, *Chemical Engineering Research and Design* 110: 171-182.  
DOI: 10.1016/j.cherd.2016.04.014
17. da Costa F.A., Periquito C., Carneiro M.C., Oliveira P., Fernandes A.I., Cavaco-Silva P. (2016) Potentially inappropriate medications in a sample of Portuguese nursing home residents: does the choice of screening tools matter? *International Journal of Clinical Pharmacy* 38:1103–1111. DOI 10.1007/s11096-016-0337-y
18. Nunes A.P., Costa I.M., Costa F.A. (2016). Determinants of self-medication with NSAIDs in a Portuguese community pharmacy, *Pharmacy Practice* 14 (1): 648 - 658.  
DOI: 10.18549/PharmPract.2016.01.648



**Some Pictures**



**Location**

**Lab. 303 and 305**

**Links**

<http://ciem.egasmoniz.edu.pt/pt-pt/research/research-labs.aspx>

*Fevereiro 2021*