

Aviso de Abertura de Concurso Internacional para Contratação de Investigador(a) Doutorado(a)

Por decisão da Direcção da NOVA.id.FCT - Associação para a Inovação e Desenvolvimento da FCT (“NOVA.id.FCT”) procede-se à abertura de um concurso internacional para a contratação, na modalidade de contrato a termo incerto, de um(a) Investigador(a) Doutorado(a), com a referência interna “#NOVAID85”, para o exercício de actividades de investigação na área Ciências da Conservação, no âmbito do Projeto “*Polifenóis em Arte: com química e biologia para uma conservação sustentável da herança cultural*”, PTDC/QUI-OUT/29925/2017, financiado pela Fundação para a Ciência e Tecnologia, I.P. /OE.

1. Modalidade de contratação e legislação aplicável

A contratação do(a) Investigador(a) Doutorado(a) realizar-se-á através de Contrato de Trabalho a Termo Incerto, a celebrar nos termos do Código do Trabalho, aprovado pela Lei n.º 7/2009, de 12 de Fevereiro, na sua redacção actual. O contrato terá uma duração previsível de 14 meses, a qual não deverá exceder a duração do Projecto acima identificado. O contrato tem início previsto em Outubro de 2019.

São ainda aplicáveis ao presente processo de contratação, designadamente, o Decreto-Lei n.º 57/2016, de 19 de Julho, alterado pela Lei n.º 57/2017, de 29 de Agosto (RJEC) e o Decreto Regulamentar n.º 11-A /2017, de 29 de Dezembro.

2. Principais funções e actividades e exclusividade

O(a) Investigador(a) Doutorado(a) irá co-coordenar as tarefas 5 e 6, implementando e levando a cabo as actividades laboratoriais. Participará ainda em todas as outras tarefas, com especial ênfase nos objectivos relacionados com a procura dos “lost yellows”. Em anexo descrevem-se as tarefas 5 e 6 (em Inglês). Deverá ser autónomo nas técnicas principais que serão utilizadas nestas tarefas (microFTIR; Raman; microespectrofluorimetria; HPLC-DAD-MS); deverá ainda ter um bom conhecimento das estruturas moleculares base dos corantes do amarelo e das tintas ferrogálhicas.

Deverá ter uma sólida formação em mecanismos de degradação e fotodegradação, a nível molecular, em objectos de interesse cultural.

O(a) Investigador(a) Doutorado(a) dedicará plenamente a totalidade da sua actividade profissional à NOVA.id.FCT, com carácter de exclusividade.

3. Local de trabalho

O(a) Investigador(a) Doutorado(a) prestará o seu trabalho nas instalações do LAQV e DCR sitas na FCT-UNL, Campus Caparica e efectuará todas as deslocações, em Portugal ou no estrangeiro, inerentes às suas funções ou necessárias ao exercício da sua actividade.

4. Remuneração mensal

O(a) Investigador(a) Doutorado(a) auferirá uma remuneração mensal líquida de € 2.128,34 que tem por referência o 1º escalão do nível remuneratório inicial, nos termos do nº 2 do Artigo 15º do DL nº 57/2016 de 19 de Julho, na redacção da Lei nº 57/2017 de 29 de Agosto, e do Decreto Regulamentar nº 11-A/2017, de 29 de Dezembro.

5. Requisitos de admissão

Podem apresentar-se ao presente concurso candidatos nacionais, estrangeiros e apátridas, titulares do grau de doutor em Ciências da Conservação e que possuam os seguintes requisitos específicos:

- a. utilizador autónomo nas técnicas principais que serão utilizadas nas tarefas 5 e 6: microFTIR; Raman; microespectrofluorimetria; HPLC-DAD-MS;
- b. conhecimento das estruturas moleculares base dos corantes do amarelo e das tintas ferrogálicas;
- c. sólida formação em mecanismos de degradação e fotodegradação, a nível molecular, em objectos de interesse cultural;
- d. disponibilidade imediata.

6. Avaliação das Candidaturas e Composição do Júri

A avaliação das candidaturas será efectuada por um júri e seguirá a tramitação prevista nos artigos 13º e 14º, aplicáveis por remissão do artigo 19º todos do DL nº 57/2016 de 19 de Julho, na redacção da Lei nº 57/2017 de 29 de Agosto.

Nos termos do disposto no Artigo 13º do DL nº 57/2016, o júri tem a seguinte composição:

- Presidente: Maria João Seixas de Melo
- Vogal: Fernando Jorge da Silva Pina
- Vogal: Victor de Freitas
- Vogal Suplente: Ana Ramos;
- Vogal Suplente: António Jorge Parola

7. Critérios de selecção

A selecção do(a) Investigador(a) Doutorado(a) a contratar será realizada através da avaliação do seu percurso científico e curricular, nos termos do DL nº 57/2016 de 19 de Julho, na redacção da Lei nº 57/2017 de 29 de Agosto, sendo abaixo descritos os critérios de selecção e a respectiva ponderação.

Avaliação curricular e experiência prévia na área de investigação requisitada (baseada nos requisitos a)-c)), com a valoração de 60% e 40%, respetivamente (numa escala de 1 a 20); o júri poderá convocar os candidatos para uma entrevista. Caso haja entrevista esta terá um peso de 10% na classificação final.

A falta de experiência comprovada na área de conservação e restauro é considerado um fator eliminatório.

- a) Avaliação curricular: 60%
- b) Experiência prévia, ver requisitos descritos a)-c): 40%
- c) Caso haja entrevista esta terá um peso de 10% na classificação final

A entrevista apenas será realizada aos candidatos cuja classificação seja superior a 17 valores nos primeiros dois critérios.

8. Decisão Final

A deliberação final do júri será homologada pelo dirigente máximo da NOVA.id.FCT a quem compete ainda decidir sobre a contratação.

A lista dos candidatos admitidos e excluídos e a lista de classificação final são publicitadas no sítio na Internet da NOVA.id.FCT (www.novaidfct.pt) e enviadas por correio eletrónico, com recibo de entrega, a todos os candidatos.

9. Apresentação de Candidaturas

As candidaturas devem ser apresentadas no período de 13/09/2019 a 26/09/2019, através do envio, por correio electrónico para a1318@fct.unl.pt, de um único ficheiro PDF contendo os seguintes documentos, redigidos em Português ou Inglês:

- 1. Curriculum Vitae*
- 2. Carta de apresentação*
- 3. Título de Doutor*

10. Política de não discriminação e de igualdade de acesso

A NOVA.id.FCT promove activamente uma política de não discriminação e de igualdade de acesso, pelo que nenhum candidato pode ser beneficiado, prejudicado ou privado de qualquer dever em razão, nomeadamente de ascendência, idade, sexo, deficiência, orientação sexual, doença crónica, nacionalidade, origem étnica ou raça, religião ou convicções políticas.

Caparica, 09 de Setembro de 2019.

Notice for International Call to hire a PhD Researcher

By decision of the Board of Directors, NOVA.id.FCT - Associação para a Inovação e Desenvolvimento da FCT (“NOVA.id.FCT”) opens an international call to hire a PhD Researcher, with the internal reference “#NOVAID85”, under a unfixed term employment contract to conduct research activities in the field Conservation Science in the scope of the Project “Polyphenols in Art: chemistry and biology hand in hand with conservation of cultural heritage”, PTDC/QUI-OUT/29925/2017, financed by “Fundação para a Ciência e Tecnologia, I.P. /OE”.

1. Type of contract and applicable legislation

The hiring of the PhD Researcher shall be made by means of an Unfixed Term Employment Contract entered into in accordance with the Portuguese Labour Code approved by the Law no. 7/2009 of February 12th, as amended. The contract should have a forecasted duration of 14 months, and should not be extended further than the project duration. The contract should begin in October 2019.

The present hiring procedure is further governed inter alia by Decree-law no. 57/2016 of July 19th, as amended by the Law no. 57/2017 of August 29th and Regulatory decree no. 11-A/2017 of November 29th.

2. Main attributions and activities and exclusivity

The PhD Researcher shall co-coordinate tasks 5 and 6 of the project, implementing and carrying out the laboratory activities. The PhD Researcher will also participate in all the other tasks, with special emphasis in the objectives related to the search for “lost yellows”. In appendix are described tasks 5 and 6. The PhD Researcher should be autonomous in the main laboratory techniques which will be used in these tasks (microFTIR; Raman; microspectrofluorimetry; HPLC-DAD-MS); the PhD Researcher should also have knowledge of the basic molecular structures of the yellow dyes and iron-gall inks. Also important is a solid background in degradation and photodegradation mechanisms, at a molecular level, in objects of cultural heritage.

The PhD Researcher shall fully devote the whole of his/her professional activity to NOVA.id.FCT, on an exclusive basis.

3. Place of work

The PhD Researcher's working place shall be at the premises of LAQV and DCR located in FCT-UNL, Campus Caparica and he/she shall travel, in Portugal or abroad, as required by his/her attributions or as necessary for his/her activity.

4. Monthly remuneration

The PhD Researcher shall earn a monthly remuneration in the gross amount of € 2.128,34 by reference to the 1st grade of the salary scale, pursuant to number 2 of Article 15 of Decree-Law no. 57/2016 of 19 July, as amended by Law no. 57/2017 of 29 August, and Regulatory Decree no. 11-A / 2017, of December 29.

5. Admission Requirements

Applicants to this call may be national, foreign or stateless candidates holding a PhD degree in the field of Conservation Science and complying with the following specific requirements:

- a. autonomous user in the main laboratory techniques which will be used in tasks 5 and 6: microFTIR; Raman, microspectrofluorimetry; HPLC-DAD-MS;*
- b. knowledge of the basic molecular structures of the yellow dyes and iron-gall inks;*
- c. solid background in degradation and photodegradation mechanisms, at a molecular level, in objects of cultural heritage;*
- d. immediate availability.*

6. Evaluation of the Applications and Composition of the Jury

Applications shall be subject to evaluation by a jury that shall follow the procedure established in articles 13 and 14 (by virtue of article 19) of Decree-Law no. 57/2016 of 19 July, as amended by Law no. 57/2017 of 29 August.

Pursuant to Article 13 of Decree-Law no. 57/2016 the jury is composed of the following members:

- *Chairwoman: Maria João Seixas de Melo*
- *Member: Fernando Jorge da Silva Pina*
- *Member: Victor de Freitas*
- *Substitute Member: Ana Ramos;*
- *Substitute Member: António Jorge Parola*

7. Selection criteria

The selection of the successful candidate will be carried out through the evaluation of the scientific and curricular achievements as established by Decree-Law no. 57/2016 of 19 July, as amended by Law no. 57/2017 of 29 August and the selection criteria and their respective weighting shall be as follows:

- a) Curricular evaluation (60%);*
- b) Previous experience, see requirements described a)-c) (40%);*
- c) Quality of the Interview (10%).*

The interview will be done only to the candidates with classification higher than 17 in the first two criteria.

8. Final Decision

The final deliberation of the jury shall be homologated by the ultimate governing body of NOVA.id.FCT that is also responsible for the decision of hiring.

The list of admitted and excluded candidates and the final list of classification will be publicised on the website of NOVA.id.FCT (www.novaidfct.pt) and sent by electronic mail with receipt of delivery to all candidates.

9. Submission of Applications

Applications must be submitted between 13/09/2019 and 26/09/2019, by email, addressed to a1318@fct.unl.pt and containing a single PDF file with the following documents in Portuguese or English languages:

- 1. Curriculum Vitae*
- 2. Presentation letter*
- 3. Doctorate degree*

10. Non-discrimination and equal access policy

NOVA.id.FCT actively promotes a non-discrimination and equal access policy, reason for which no candidate can be benefited, prejudiced or deprived of any duty, namely age, sex, disability, sexual orientation, chronic illness, nationality, ethnic origin or race, religion or political beliefs.

Caparica, 09 de Setembro de 2019.

APPENDIX

TASK 5 Towards new treatments for iron gall inks in manuscripts: safety assessment and efficacy testing

Starting date: July 2019 (24 months)

M1: Selection of stabilization treatments - Selection of iron gal ink stabilization treatments to test

M2: Assessing safeness and efficacy of new stabilization treatments - Test of the selected treatments on prepared iron gall ink samples

M3: Comparative analysis of new stabilization treatments - Comparison of selected treatments with currently used ones

This task begins by a full revision of the treatments used over time, from the consolidation with silk and starch or the application of the cellulose nitrate coating (Zapon), to the application of calcium-phytate / calcium-bicarbonate method, on ink corroded objects. A systematic evaluation of the different methods applied, in terms of efficiency and the side-effects will be done. This will inform us on the protocol we plan to design to assess the possible side effects of the new treatments that will be developed in this task.

Innovative treatments for iron gall ink stabilization will be tested, and target the iron gall ink complexes and non-complexed molecules/ions identified in the previous. Current conservation treatments are projected to act on the prevention of iron catalysed oxidation and on acid neutralization without first understanding which molecules exist and should be targeted on a degrading iron gall ink written manuscript.

The development of conservation treatments will be inspired by the iron stabilisation methods used in metals conservation, and compared to the currently used iron gall ink treatments achieving higher potential. The objective is to develop innovative protection systems respecting conservation standards, i.e. with high efficiency, easy to apply, and environmentally safe. Base on the results obtained, other family of molecules may be also tested.

TASK 6 In search of "lost yellows": unravelling the secrets of yellow colour paints in medieval manuscripts with photochemistry

Starting date: July 2019 (24 months)

M1: Selection of the references for "lost yellows" - Selection of the most stable yellow colorants – end first year

M2: Assessing stability of "lost yellows" - Selection of the most stable yellow colour paints – end second year

M3: Can they be "lost yellows"? - Assessing chemical stability by comparison with brazilwood and cochineal paints – end third year

We will study the stability of yellow dyes extracted from the natural sources obtained in Task 2. The stability of the yellow colours will be assessed by the quantum yields of reaction. Extracts displaying highest colour stability will be used to extract the main chromophores. The latter will be fully characterized by HRMS, NMR and IR. Whenever commercially available they will be acquired; if not, they will be obtained by preparative HPLC.

The yellow chromophores that will show best stability & colour will be prepared as colour paints and artificially aged. Aged and unaged samples will be characterized by a multi-analytical approach using in situ or micro sampling techniques which are also used to study original medieval manuscripts. The data collected will assess the use of regional yellows in Portuguese medieval manuscripts and to identify markers in aged samples.

T6.1) Stability studies

6.1.1 Monochromatic light irradiation

Quantum yields of reactions will be obtained and, for a few selected chromophores, the main products formed will be identified. The influence of external factors, such as pH, O₂, metal ions in the quantum yields of reactions will be studied whenever the information proved to be relevant. Photochemical studies will be carried out in both homogeneous (solution) and heterogeneous media (gels and other matrixes). Irradiation will be carried out in a home-made set-up, based on a Xenon lamp, which displayed a tenfold higher photon intensity when compared with the traditional medium pressure mercury irradiation lamps, and allow us to irradiate at any desired wavelength. We plan to use this set-up and to improve it, within this new proposal.

6.1.2 Polychromatic light irradiation

Medieval paints, obtained by grinding the colorants with parchment glue, will be prepared as in task 3 and will be aged with Xenon light. Degradation will be followed by microRaman, microFTIR, FORS and microspectrofluorimetry

6.1.3 Thermal ageing

Different solutions of selected yellow chromophores and suspensions of their aluminium lakes will be prepared in water with other extenders and at different pH to test their influence. The solutions and the suspensions will be placed into an orbital shaker at 323 K, and their evolution followed over time until significant degradation is observed. Solutions may be analysed without further preparation. Suspensions will be filtered and dried, and analysed by microRaman, microFTIR, FORS and microspectrofluorimetry as powders or as paints applied with a brush on parchment.

T6.2) Multi-analytical characterization of yellow colour paints

The molecular characterization of colorants in medieval manuscripts will be carried out following a methodology developed by our group.