University Grenoble Alpes/CNRS/CEA
Interdisciplinary Research Institute of Grenoble (IRIG)
Laboratory of Chemistry and Biology of Metals (CBM)
17, rue des Martyrs
38054 Grenoble, France

Grenoble, June 21st 2019

To whom it may concern

Object: Letter of recommendation for Serge Nader

Dear Madame or Sir,
With this letter, I want to support the application of Serge Nader to a Postdoctoral fellowship in academic research.

I had the occasion to work with Serge during his PhD at the Laboratory of Chemistry and Biology of Metals (CBM), within the Modelling and Theoretical Chemistry group. As a group member, I could follow the development of Serge's project and his approach to both experimental and theoretical problems, which he could solve thanks to his determination and motivation.

Serge enrolled in a challenging PhD project including theoretical prediction of protein structures as well as advanced structural biology experiments, including synchrotron techniques (SAXS, XRD, XAFS). He was an active player in all the different aspects of this multifaceted project, working autonomously on modelling and laboratory techniques, and as a team player in synchrotron experiments. His critical look was crucial in the interpretation of the experimental results.

Serge has a curious, dedicated and critical attitude that brings him to deepen his knowledge of scientific subjects in order to reach a real understanding of the phenomena he investigates. He is truly passionate by evolution and origins of life, and has an impressive knowledge of these topics, far beyond what was required during his studies.

For the above mentioned reasons, I advise Serge to pursue his career in academic research, and I fully support his future applications as a postdoctoral fellow in projects related to evolution and origin of life.

Yours sincerely,

Giulia Veronesi
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Laboratoire de Chimie et Biologie des Métaux UMR CNRS-UJF-CEA 5249
Institut de Recherche Interdisciplinaire de Grenoble (IRIG)

Grenoble June 18th 2019

Letter of support to Mr Serge NADER for a postdoctoral job

To whom it may concern,

Head of the group of Modeling and Theoretical Chemistry (MCT) at CEA Grenoble (http://www-dsv.cea.fr/irtsv/lcbm/gmct), I supervised Mr Serge Nader during his thesis in my team entitled: "Structural studies on inhibition mechanisms, oligomerization and DNA binding of the transcription regulator Fur: from *in silico* simulations to *in vitro* biological assays."

The "Ferric Uptake Regulator" (Fur) which is a metal dependent transcription regulator with a large regulatory network controlling iron homeostasis and bacterial virulence was chosen as alternative route to antibiotics for fighting against pathogens.

In a biophysical study of Fur, Serge Nader used a combined experimental and theoretical approach by performing XAS, SAXS and MALLS experiments together with complex computer simulations. We have described for the first time the structures of Fur from *E. coli* and a tetrameric Fur structure of a mutant from *P. aeruginosa*.

Moreover, free energy profiles of Fur proteins, as tetramers or dimers bound to DNA, from different species were generated and key residues involved in the interactions determined, providing mechanistic insights into Fur complexes. The structural information gathered from this work will be used to better understand inhibition mechanisms of Fur proteins providing new opportunities to overcome drug development challenges.

During these three years under the supervision of biochemists, biophysicists and theoretical chemists, Serge acquired solid skills and experience in most common experimental biophysical techniques and also molecular dynamics simulations, python or shell programming. He always showed great interest for new approaches and large concentration and patience during the difficult cristallogenesis or protein purification tasks. Part of this work was published in *Commun Biol. 2018 Jul 17;1:93*, where Serge deserves the joint first rank in the list of authors.

Serge has always been very enthusiastic in his research especially on aspects regarding evolution, a direction that he followed in complete autonomy for Fur proteins in an original work recently published in *Biometals. 2019 Jun 4*. Two other manuscripts with Serge among the first authors are still in preparation and should be published soon.

Serge Crouzy PhD HDR
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Finally, Serge has been very much involved in the life of the laboratory for which he participated in creating a facebook page and he was estimated by his colleagues with whom he appreciated having long discussions.

For all his qualities and large interest and skills, I therefore greatly recommend Serge Nader for a Postdoctoral job in your laboratory.

Dr. Serge Crouzy

LCBM CEA Grenoble

Serge Crouzy PhD HDR
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