

Curriculum Vitae/Biosketch

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Name and Contact Information

Citizenship

ResearcherID

ORCID iD

- orcid.org/0000-0001-9279-2217

Education

- Licenciatura in Environmental Engineering (5-year University degree, equivalent to B.Sc. + M.Sc.), University of Aveiro, Aveiro, Portugal 1981
- Ph.D., University of Georgia, Athens, Georgia, U.S.A. Dissertation Title: "*Heme Biosynthesis: Characterization of the Two Terminal Membrane-bound Enzymes*" 1986
- Postdoctoral Fellow, Department of Biological Chemistry, The Johns Hopkins University, School of Medicine, Baltimore, MD, U.S.A. 1987 - 1988
- Damon Runyon-Walter Winchell Postdoctoral Fellow, Department of Biological Chemistry, The Johns Hopkins University, School of Medicine, Baltimore, MD, U.S.A. 1988 - 1990

Positions Held

- Laboratory Demonstrator, Department of Chemistry, University of Aveiro, Aveiro, Portugal 1979 - 1981
- Teaching Fellow, Department of Chemistry, University of Aveiro, Aveiro, Portugal 1981 - 1982
- Research Assistant Scientist, Department of Microbiology, University of Georgia, Athens, Georgia 1990 - 1991
- Assistant Professor, Department of Biochemistry and Molecular Biology, College of Medicine, University of South Florida, Tampa, Florida 1991 - 1995
- Member, Institute for Biomolecular Science, University of South Florida, Tampa 1991 - 2001
- Member, H. Lee Moffitt Cancer Center and Research Institute, University of South Florida, Tampa, Florida 1993 - 2013
- Associate Professor, Department of Biochemistry and Molecular Biology, College of Medicine, University of South Florida, Tampa, Florida 1995 - 1999
- Sabbatical leave at The Johns Hopkins University School of Medicine, Department of Pediatrics, Baltimore, Maryland Mar 1 - May 31, 1998
- Visiting Associate Professor, The Johns Hopkins University School of Medicine Department of Pediatrics, Baltimore, Maryland May 1 - Dec. 31, 1998
- Professor, Department of Molecular Medicine (concentration in Biochemistry and Molecular Biology)*, Morsani College of Medicine, University of South Florida, Tampa, Florida [*Departmental name changed in 2006] 1999 - present
- Member, Florida Center of Excellence for Biomolecular Identification and Targeted Therapeutics (FCoE-BITT), University of South Florida, Tampa, Florida 2007 - 2010
- Professor, Affiliate Appointment, Department of Chemistry, University of South Florida, Tampa, Florida 2007 - present
- Professor, Courtesy Appointment, Department of Global Health, College of Public Health, University of South Florida, Tampa, Florida 2017 - present

Honors

- Highest grade point average - Environmental Engineering, University of Aveiro 1981
- Sea Grant Predoctoral Fellowship, University of Georgia 1982 - 1983
- Department of Microbiology Stipend Enhancement, University of Georgia 1983 - 1984
- University of Georgia System Board of Regents Stipend Enhancement 1984 - 1985
- Gordon Research Conference (Bioenergetics) Registration Fee and Housing Award 1989
- American Cancer Society Junior Faculty Award 1992 - 1995

- National Science Foundation Young Investigator Award 1992 - 1997
- University of South Florida Presidential Young Faculty Award 1995 - 1996
- Elected Vice-Chair of the Gordon Research Conference on “*The Chemistry and Biology of Tetrapyrroles*” 2000
- Elected Chair of the Gordon Research Conference on “*The Chemistry and Biology of Tetrapyrroles*” 2002
- Representative of the Gordon Research Conference on “*The Chemistry and Biology of Tetrapyrroles*” July 2002 - 2004
- Elected Member of the Nominating Committee of the Division of Biological Chemistry, American Chemical Society 2002 - 2004
- Member of the USF Chapter of the National Academy of Inventors (NAI) 2014 - present

Membership in Professional Societies

- American Society for Biochemistry and Molecular Biology
- Biophysical Society
- Protein Society
- American Association for Advancement of Science
- American Chemical Society
- American Society for Hematology
- American Porphyria Foundation
- Society of Porphyrins & Phthalocyanines

Other Experience (selected)

- Editor and Organizer for Minireview Series for the *Journal of Bioenergetics and Biomembranes*; Topic: “*Heme: Its Biosynthesis and Relationship to Disease*”. 1995
- Member: American Cancer Society Institutional Research Grant Peer Review Committee 1995 - 1999
- Member: American Heart Association, Florida Affiliate, Research Peer Review Committee 1996 - 1997
- Co-Organizer of *Symposium on Inorganic Biochemistry & Regulatory Mechanisms of Iron Metabolism*”, Portugal 1998
- Senior Editor of a Book Entitled “*Inorganic Biochemistry and Regulatory Mechanisms of Iron Metabolism*”. Wiley-VCH, Weinheim, Germany, 1999. 412 PP. 1999
- Member: International Advisory Board for the Vitamin B6 and Quinoproteins 2001 - 2002
- National Science Foundation, Metabolic Biochemistry, panelist 2003
- Member: International Advisory Board for the Vitamin B6 and Quinoproteins 2004 - 2010
- NIH, Cell Development & Function (CDF), Pre-doctoral Minorities/Disabilities Fellowship Program (F31) 2004
- NIH, Protein Structure and Function Study Section, Special Emphasis Panel 2004
- NIH/NHLB, Special Emphasis Panel (SEP) to review Conference Grant Applications by Asynchronous Electronic Discussion (AED) 2008
- Guest Editor of 5-volume set (2000 pages) of “*The Handbook of Porphyrin Science*”: 2014
 1. “*Heme Biochemistry*”, (**Ferreira, G.C.**, Editor), Vol. 26 of “*Handbook of Porphyrin Science*” series (Kadish, K. M., Smith, K. M., and Guilard, R., series Eds.), World Scientific Publishing Co., Singapore, 2013. 478 PP.
 2. “*Erythropoiesis, Heme and Applications to Biomedicine*”, (**Ferreira, G.C.**, Editor), Vol. 27 of “*Handbook of Porphyrin Science*” series

- (Kadish, K. M., Smith, K. M., and Guillard, R., series Eds.), World Scientific Publishing Co., Singapore, 2013. 431 PP.
3. “*Chlorophyll, Photosynthesis and Bio-inspired Energy*”, (**Ferreira, G.C.**, Editor), Vol. 28 of “Handbook of Porphyrin Science” series (Kadish, K. M., Smith, K. M., and Guillard, R., series Eds.), World Scientific Publishing Co., Singapore, 2013. 327 PP.
 4. “*Porphyrias and Sideroblastic Anemias*”, (**Ferreira, G.C.**, Editor), Vol. 29 of “Handbook of Porphyrin Science” series (Kadish, K. M., Smith, K. M., and Guillard, R., series Eds.), World Scientific Publishing Co., Singapore, 2013. 496 PP.
 5. “*Heme Proteins – Part II*”, (**Ferreira, G.C.**, Editor), Vol. 30 of “Handbook of Porphyrin Science” series (Kadish, K. M., Smith, K. M., and Guillard, R., series Eds.), World Scientific Publishing Co., Ne Singapore, 2013. 450 PP.
- Member: Anna Valentine University of South Florida – H. Lee Moffitt Cancer Research Award program

2013, 2015, 2017

Teaching Experience: Lectured in 30 different courses

Major Professor for Ph.D. Candidates: 13 students

Major Professor for M.Sc. Candidates: 4 students

Co- Major Professor for Ph.D. Candidates: 4 students

USF Ph.D. Graduate Student Dissertation Committees: 49 students

External Ph.D. Graduate Student Dissertation Committees: 3 students

Master of Science Thesis Committees: 3 students

Undergraduate Honor Student Dissertation Committees: 2 students

Undergraduate Student Participants in Laboratory Studies: 15 students

M.Sc. Student Participants in Laboratory Studies: 17 students

Medical Student Participants in Laboratory Studies: 8 students

Postdoctoral Fellows: 14 fellows

Research Assistant Professor: 1

Visiting Students: 7

Publications (<https://orcid.org/0000-0001-9279-2217>)

Articles (selected of 129)

1985 – 1990

1. **Ferreira, G.C.**, and Dailey, H.A. (1987) [Reconstitution of the two terminal enzymes of the heme biosynthetic pathway into phospholipid vesicles.](#) *J. Biol. Chem.* **262**, 4407-4412. PubMed **PMID:** [3558411](#). [Link to article.](#)
2. **Ferreira, G.C.**, Andrew, T.L., Karr, S.W. and Dailey, H.A. (1988) [Organization of the terminal two enzymes of the heme biosynthetic pathway. Orientation of protoporphyrinogen oxidase and evidence of a membrane complex.](#) *J. Biol. Chem.* **263**, 3835-3839. PubMed **PMID:** [3346226](#). [Link to article.](#)
3. **Ferreira, G.C.**, Pratt, R.D., and Pedersen, P.L. (1989) [Energy-linked anion transport. Cloning, sequencing, and characterization of a full length cDNA encoding the rat liver mitochondrial proton/phosphate symporter.](#) *J. Biol. Chem.* **264**, 15628-15633. **PMID:** [2670944](#). [Link to article](#)

4. **Ferreira, G.C.**, Pratt, R.D., and Pedersen, P.L. (1990) [Mitochondrial proton/phosphate transporter. An antibody directed against the COOH terminus and proteolytic cleavage experiments provide new insights about its membrane topology.](#) *J. Biol. Chem.* **265**, 21202-21206. PMID: [2250020](#). [Link to article](#)

1991 - 1995

5. Pratt, R.D., **Ferreira, G.C.**, and Pedersen, P.L. (1991) [Mitochondrial phosphate transport. Import of the H⁺/Pi symporter and role of the presequence.](#) *J. Biol. Chem.* **266**, 1276-1280. PMID: [1985946](#). [Link to article](#)
6. **Ferreira, G.C.** and Pedersen, P.L. (1992) [Overexpression of higher eukaryotic membrane proteins in bacteria. Novel insights obtained with the liver mitochondrial proton/phosphate symporter.](#) *J. Biol. Chem.* **267**, 5460-5466. PMID: [1531983](#). [Link to article](#)
7. **Ferreira, G.C.** and Dailey, H.A. (1993) [Expression of mammalian 5-aminolevulinate synthase in Escherichia coli. Overproduction, purification, and characterization.](#) *J. Biol. Chem.* **268**: 584-590. PMID: [8416963](#). [Link to article](#)
8. **Ferreira, G. C.**, Neame, P. J., and Dailey, H. A. (1993) [Heme biosynthesis in mammalian systems: Evidence of a Schiff base linkage between the pyridoxal 5'-phosphate cofactor and a lysine residue in 5-aminolevulinate synthase.](#) *Protein Science* **2**, 1959-1965. PubMed Central PMCID: PMC2142290. PubMed PMID: [8268805](#). DOI: [10.1002/pro.5560021117](#).
9. **Ferreira, G. C.** (1994) [Mammalian ferrochelatase. Overexpression in Escherichia coli as a soluble protein, purification and characterization.](#) *J. Biol. Chem.* **269**, 4396-4400. PMID: [8308010](#). [Link to article](#)
10. **Ferreira, G. C.**, Franco, R., Lloyd, S., Pereira, A.S., Moura, I., Moura, J. J. G., and Huynh, B. H. (1994) [Mammalian ferrochelatase, a new addition to the metalloenzyme family.](#) *J. Biol. Chem.* **269**, 7062-7065. PubMed PMID: [8125912](#). [Link to article](#)
11. Gong, J. and **Ferreira, G.C.** (1995) [Aminolevulinate synthase: functionally important residues at a glycine loop, a putative pyridoxal phosphate cofactor-binding site.](#) *Biochemistry* **34**, 1678-1685. PMID: [7849027](#). DOI: [10.1021/bi00005a024](#).
12. Hunter, G. A. and **Ferreira, G.C.** (1995) [A continuous spectrophotometric assay for 5-aminolevulinate synthase that utilizes substrate cycling.](#) *Anal. Biochem.* **226**, 221-224. PubMed PMID: [7793621](#). DOI: [10.1006/abio.1995.1217](#).
13. Franco, R., Moura, I., Moura, J. J. G., Lloyd, S., Huynh, B. H., Forbes, W. S., and **Ferreira, G.C.** (1995) [Characterization of the iron-binding site in mammalian ferrochelatase by kinetic and Mössbauer methods.](#) *J. Biol. Chem.* **270**, 26352-26357. PubMed PMID: [7592847](#). DOI: [10.1074/jbc.270.44.26352](#).

1996 – 2000

14. Tan, D. and **Ferreira, G. C.** (1996) [Active site of 5-aminolevulinate synthase resides at the subunit interface. Evidence from in vivo heterodimer formation.](#) *Biochemistry* **35**, 8934-8941. PubMed PMID: [8688429](#) DOI: [10.1021/bi952918m](#).
15. Lloyd, S., Franco, R., Moura, I., Moura, J. J. G., **Ferreira, G. C.**, and Huynh, B. H. (1996) [Functional Necessity and Physicochemical Characteristics of the \[2Fe-2S\] Cluster in Mammalian Ferrochelatase.](#) *J. Amer. Chem. Soc.* **118**, 9892-9900. DOI: [10.1021/ja954000o](#).
16. Gong, J., Kay, C. J., Barber, M. J., and **Ferreira, G. C.** (1996) [Mutations at a glycine loop in aminolevulinate synthase affect pyridoxal phosphate cofactor binding and catalysis.](#) *Biochemistry* **35**, 14109-14117. PMID: [8916896](#) DOI: [10.1021/bi961296h](#).
17. Tan, D., Harrison, T., Hunter, G. A., and **Ferreira, G. C.** (1998) [Role of arginine 439 in substrate binding of 5-aminolevulinate synthase.](#) *Biochemistry* **37**, 1478-1484. PMID: [9484217](#) DOI: [10.1021/bi971928f](#).
18. Gong, J., Hunter, G. A., and **Ferreira, G. C.** (1998) [Aspartate-279 in aminolevulinate synthase affects enzyme catalysis through enhancing the function of the pyridoxal 5'-phosphate cofactor.](#) *Biochemistry* **37**, 3509-3517. PubMed PMID: [9521672](#) DOI: [10.1021/bi9719298](#).

19. Tan, D., Barber, M. J., and **Ferreira, G. C.** (1998) [The role of tyrosine 121 in cofactor binding of 5-aminolevulinate synthase](#). *Protein Science* **7**, 1208-1213. PMID: [9605326](#) DOI: [10.1002/pro.5560070516](#).
20. Hunter, G. A., and **Ferreira, G. C.** (1999) [Lysine-313 of 5-aminolevulinate synthase acts as a general base during formation of the quinonoid reaction intermediates](#). *Biochemistry* **38**, 3711-3718. PMID: [10090759](#) DOI: [10.1021/bi982390w](#).
21. Hunter, G. A., and **Ferreira, G. C.** (1999) [Pre-steady-state reaction of 5-aminolevulinate synthase. Evidence for a rate-determining product release](#). *J. Biol. Chem.* **274**, 12222-12228. PubMed PMID: [10212188](#) DOI: [10.1074/jbc.274.18.12222](#).
22. Feldser, D., Agani, F., Iyer, N. V., Pak, B., **Ferreira, G.**, and Semenza, G. L. (1999) [Reciprocal positive regulation of hypoxia-inducible factor 1 \$\alpha\$ and insulin-like growth factor 2](#). *Cancer Res.* **59**, 3915-3918. PubMed PMID: [10463582](#). [Link to article](#)
23. Franco, R., Ma, J.-G., Lu, Y., **Ferreira, G. C.**, and Shelnett, J. A. (2000) [Porphyrin interactions with wild-type and mutant mouse ferrochelatase](#). *Biochemistry* **39**, 2517-2529. PubMed PMID: [10704201](#). DOI: [10.1021/bi991346t](#).
24. Schneider-Yin, X., Gouya, L., Dorsey, M., Rüfenacht, U. Deybach, J.-C., and **Ferreira, G. C.** (2000) [Mutations in the iron-sulfur cluster ligands of the human ferrochelatase lead to erythropoietic protoporphyria](#). *Blood* **96**, 1545-1549. PubMed PMID: [10942404](#). [Link to article](#)

2001 – 2005

25. Cheltsov, A. V., Barber, M. J., and **Ferreira, G. C.** (2001) [Circular permutation of 5-aminolevulinate synthase. Mapping the polypeptide chain to its function](#). *J. Biol. Chem.* **276**, 19141-19149. PMID: [11279050](#) DOI: [10.1074/jbc.M100329200](#).
26. **Ferreira, G. C.**, Franco, R., Mangravita, A., and George, G. N. (2002) [Unraveling the substrate-metal binding site of ferrochelatase: an X-ray absorption spectroscopic study](#). *Biochemistry* **41**, 4809-4818. PubMed PMID: [11939775](#) DOI: [10.1021/bi015814m](#).
27. Lu, Y., Sousa, A., Franco, R., Mangravita, A., **Ferreira, G. C.**, Moura, I. and Shelnett, J. A. (2002) [Binding of protoporphyrin IX and metal derivatives to the active site of wild-type mouse ferrochelatase at low porphyrin-to-protein ratios](#). *Biochemistry* **41**, 8253-8262. PubMed PMID: [12081474](#) DOI: [10.1021/bi025569m](#).
28. Zhang, J. and **Ferreira, G. C.** (2002) [Transient state kinetic investigation of 5-aminolevulinate synthase reaction mechanism](#). *J. Biol. Chem.* **277**, 44660-44669. PMID: [12191993](#) DOI: [10.1074/jbc.M203584200](#).
29. Hofer, T., Wenger, R. H., Kramer, M. F., **Ferreira, G. C.** and Gassmann, M. (2003) [Hypoxic up-regulation of erythroid 5-aminolevulinate synthase](#). *Blood* **101**, 348-350. PubMed PMID: [12393745](#) DOI: [10.1182/blood-2002-03-0773](#).
30. Krishnamachary, B., Berg-Dixon, S., Kelly, B., Agani, F., Feldser, D., **Ferreira, G.**, Iyer, N., LaRusch, J., Pak, B., Taghavi, P., and Semenza, G. L. (2003) [Regulation of colon carcinoma cell invasion by hypoxia-inducible factor 1](#). *Cancer Res.* **63**, 1138-1143. PubMed PMID: [12615733](#). [Link to article](#)
31. Cheltsov, A. V., Guida, W. C. and **Ferreira, G. C.** (2003) [Circular permutation of 5-aminolevulinate synthase: effect on folding, conformational stability, and structure](#). *J. Biol. Chem.* **278**, 27945 - 27955. PubMed PMID: [12736261](#) DOI: [10.1074/jbc.M207011200](#).
32. Park, S., Gakh, O., O'Neill H. A., Mangravita, A., Nichol, H., **Ferreira, G. C.**, and Isaya, G. (2003) [Yeast frataxin sequentially chaperones and stores iron by coupling protein assembly with iron oxidation](#). *J. Biol. Chem.* **278**, 31340 - 31351. PubMed PMID: [12732649](#) DOI: [10.1074/jbc.M303158200](#).
33. Shi, Z. and **Ferreira, G. C.** (2004) [Probing the active site loop motif of murine ferrochelatase by random mutagenesis](#). *J. Biol. Chem.* **279**, 19977- 19986. PubMed PMID: [14981080](#) DOI: [10.1074/jbc.M313821200](#).
34. O'Neill, H. A., Gakh, O., Park, S., Cui, J., Mooney, S. M., Sampson, M., **Ferreira, G. C.**, and Isaya, G. (2005) [Assembly of human frataxin is a mechanism for detoxifying redox-active iron](#). *Biochemistry* **44**, 537-545. PubMed PMID: [15641778](#) DOI: [10.1021/bi048459j](#).
35. Zhang, J., Cheltsov, A. V. and **Ferreira, G. C.** (2005) [Conversion of 5-aminolevulinate synthase into a more active enzyme by linking the two subunits: spectroscopic and kinetic properties](#). *Protein Science* **14**,

1190-1200. PubMed Central **PMCID:** PMC2253255. PubMed **PMID:** [15840827](#) DOI: [10.1110/ps.041258305](#).

2006 – 2010

36. Gakh, O., Park, S., Gang, L., Macomber, L., Imlay, J. A., **Ferreira, G. C.**, and Isaya, G. (2006) [Mitochondrial iron detoxification is a primary function of frataxin that limits oxidative damage and preserves cell longevity.](#) *Hum. Mol. Genet.* **15**, 467-479. PubMed **PMID:** [16371422](#) DOI: [10.1093/hmg/ddi461](#).
37. Shi, Z., Franco, R., Haddad, R., Shelnut, J. A. and **Ferreira, G. C.** (2006) [The conserved active-site loop residues of ferrochelatase induce porphyrin conformational changes necessary for catalysis.](#) *Biochemistry* **45**, 2904-2912. PubMed **PMID:** [16503645](#) DOI: [10.1021/bi051907i](#).
38. Al-Karadaghi, S., Franco, R., Hansson, M., Shelnut, J. A., Isaya, G. and **Ferreira, G. C.** (2006) [Chelataes: distort to select?](#) *Trends in Biochem. Sci.* **31**, 135-142. [Article featured on the cover of the March 2006 issue.]. PubMed Central **PMCID:** [PMC2997100](#). PubMed **PMID:** [16469498](#) DOI: [10.1016/j.tibs.2006.01.001](#).
39. Dias, J. S., Macedo, A. L., **Ferreira, G. C.**, Peterson, F. P., Volkman, B. F. and Goodfellow, B. J. (2006) [The first structure from the SOUL/HBP family of heme-binding proteins, murine P22HBP.](#) *J. Biol. Chem.* **279**, 31553 – 31561. PubMed **PMID:** [16905545](#) DOI: [10.1074/jbc.M605988200](#).
40. Turbeville, T. D., Zhang, J., Hunter, G. A. and **Ferreira, G. C.** (2007) [Histidine 282 in 5-aminolevulinate synthase affects substrate binding and catalysis.](#) *Biochemistry* **46**, 5972-5981. PubMed Central **PMCID:** [PMC2566939](#). PubMed **PMID:** [17469798](#). DOI: [10.1021/bi062053k](#).
41. Hunter, G. A., Zhang, J. and **Ferreira, G. C.** (2007) [Transient kinetic studies support refinements to the chemical and kinetic mechanisms of aminolevulinate synthase.](#) *J. Biol. Chem.* **282**, 23025 – 23035. PubMed Central **PMCID:** [3733378](#). PubMed **PMID:** [17485466](#) DOI: [10.1074/jbc.M609330200](#).
42. Karlberg, T., Hansson, M. D., Yengo, R. K., Johansson, R., Thorvaldsen, H. O., **Ferreira, G. C.**, Hansson, M. and Al-Karadaghi, S. (2008) [Porphyrin binding and distortion and substrate specificity in the ferrochelatase reaction: the role of active site residues.](#) *J. Mol. Biol.* **378**, 1074 – 1083. PubMed Central **PMCID:** [PMC2852141](#). **PMID:** [18423489](#) DOI: [10.1016/j.jmb.2008.03.040](#).
43. Hunter, G. A., Sampson, M. P. and **Ferreira, G. C.** (2008) [Metal ion substrate inhibition of ferrochelatase.](#) *J. Biol. Chem.* **283**, 23685-23691. **PMCID:** [PMC3259753](#). **PMID:** [18593702](#) DOI: [10.1074/jbc.M803372200](#).
44. Lendrihas, T., Zhang, J., Hunter, G. A. and **Ferreira, G. C.** (2009) [Arg-85 and Thr-430 in murine 5-aminolevulinate synthase coordinate acyl-CoA-binding and contribute to substrate specificity.](#) *Protein Science* **18**, 1847-1859. PubMed Central **PMCID:** [PMC2777360](#). PubMed **PMID:** [19562746](#) DOI: [10.1002/pro.195](#).
45. Lendrihas, T., Hunter, G. A. and **Ferreira, G. C.** (2010) [Serine 254 enhances an induced fit mechanism in murine 5-aminolevulinate synthase.](#) *J. Biol. Chem.* **285**, 3351-3359. PubMed Central **PMCID:** [PMC2823457](#). PubMed **PMID:** [19917609](#) DOI: [10.1074/jbc.M109.066548](#).
46. Lendrihas, T., Hunter, G. A. and **Ferreira, G. C.** (2010) [Targeting the active site gate to yield hyperactive variants of 5-aminolevulinate synthase.](#) *J. Biol. Chem.* **285**, 13704-13711. PubMed Central **PMCID:** [PMC2859533](#). **PMID:** [20194506](#) DOI: [10.1074/jbc.M109.074237](#).
47. Hunter, G. A. and **Ferreira, G. C.** (2010) [Identification and characterization of an inhibitory metal ion-binding site in ferrochelatase.](#) *J. Biol. Chem.* **285**, 41836-41842. PubMed Central **PMCID:** [PMC3009911](#). PubMed **PMID:** [20966079](#) DOI: [10.1074/jbc.M110.174243](#).

2011 – 2015

48. McIntyre, N. R., Franco, R., Shelnut, J. A. and **Ferreira, G. C.** (2011) [Nickel\(II\) chelatase variants directly evolved from murine ferrochelatase: porphyrin distortion and kinetic mechanism.](#) *Biochemistry* **50**, 1535-1544. PubMed Central **PMCID:** [PMC3050429](#). PubMed **PMID:** [21222436](#) DOI: [10.1021/bi101170p](#).
49. Hunter, G. A. and **Ferreira, G. C.** (2011) [Molecular enzymology of 5-aminolevulinate synthase, the gatekeeper of heme biosynthesis.](#) *Biochem. Biophys. Acta* **1814**, 1467-1473. PubMed Central **PMCID:** [PMC3090494](#). PubMed **PMID:** [21215825](#) DOI: [10.1016/j.bbapap.2010.12.015](#) (Invited Article for a Special Issue on Pyridoxal 5'-Phosphate-dependent Enzymes).

50. Turbeville, T. D., Zhang, J., Adams, W. C., Hunter, G. A. and **Ferreira, G. C.** (2011) [Functional asymmetry for the active sites of linked 5-aminolevulinate synthase and 8-amino-7-oxononanoate synthase](#). *Arch. Biochim. Biophys.* **511**, 107-117. PubMed Central **PMCID:** [PMC3136873](#). **PMID:** [21600186](#) DOI: [10.1016/j.abb.2011.05.002](#).
51. To-Figueras, J., Ducamp, S., Clayton J., Badenas, C., Delaby, C., Ged., Lyoumi, S., Gouya, L., de Verneuil, H., Beaumont, C., **Ferreira, G. C.**, Deybach, J.C., Herrero, C. and Puy, H. (2011) [ALAS2 acts as a modifier gene in patients with congenital erythropoietic porphyria](#). *Blood* **118**, 1443-1451. PubMed **PMID:** 21653323. DOI: [10.1182/blood-2011-03-342873](#). (Selected as Plenary Article).
52. Ducamp, S., Schneider-Yin, X., de Rooij, F., Clayton, J., Fratz, E. J., Rudd, A., Ostapowicz, G., Varigos, G., Lefebvre, T., Deybach, J.-C., Gouya, L., Wilson, P., **Ferreira, G. C.**, Minder, E. I. and Puy, H. (2013) [Molecular and functional analysis of the C-terminal region of human erythroid-specific 5-aminolevulinic synthase associated with X-linked dominant protoporphyria \(XLDPP\)](#). *Hum. Mol. Gen.* **22**, 1280-1288. PubMed **PMID:** [23263862](#) DOI: [10.1093/hmg/dd531](#).
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