

## Curriculum Vitae

### **Heloisa Beraldo**

Professor of Chemistry

Born in São Paulo, Brazil, 19/11/1951

### **Professional Address**

Departamento de Química Universidade Federal de Minas Gerais

Av. Presidente Antonio Carlos 6627, 31270-901 Belo Horizonte MG Brazil

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### **Education**

#### **Undergraduate**

1975 Bs, Chemistry, Universidade Federal de Minas Gerais, Brazil

#### **Graduate**

1979 M. Sc., Chemistry, Departamento de Química Universidade Federal de Minas Gerais, Brazil

1984 PhD, Docteur d'État ès Sciences Physiques, Université Paris VI, Paris, France

#### **Senior Stage**

1996 Senior Stage, Department Illinois State University, Normal IL, US

### **Professional**

1A scientific rank researcher from CNPq, Brazil (2013 to present)

Director of the Inorganic Chemistry Division, Brazilian Chemical Society (2001-2003)

Vice-Chairwoman of the XI Brazilian Meeting on Inorganic Chemistry (XI BMIC/ Joint Brazilian-Italian Inorganic Chemistry Meeting) (2002)

Regional Secretary, Brazilian Chemical Society (1992-1994)

## **University Appointments**

1975-1980 Lecturer, Departamento de Química Universidade Federal de Minas Gerais, Brazil

1980-1984 Assistant Professor of Chemistry, Departamento de Química Universidade Federal de Minas Gerais, Brazil

2004 to present, Full Professor of Chemistry, Departamento de Química Universidade Federal de Minas Gerais, Brazil

1993 Professeur Invitée, Université Paris XIII, France (two months)

1999 Professeur Invitée, Université Paris XIII, France (two months)

2010 Professeur Invitée, Université Paris XIII, France (two months)

## **Member of Committees/ Editorial Boards**

Member of the Brazilian Chemical Society Council (2008-2010)

Member of the Advisory Committee of the Brazilian Research Council, CNPq (2007-2013)

Coordinator of the Chemistry Advisory Committee of the Brazilian Research Council, CNPq (2012-2013)

Member of the Ruling Committee of the National Institute of Science and Technology of Drugs and Medicines (INCT-INOVAR)

Member of the Editorial Advisory Board of ACS Omega

Editor of the special issue entitled “Química Inorgânica e Medicina” (Inorganic Chemistry and Medicine) of the journal “Química Nova na Escola” published by the Brazilian Chemical Society, whose target is high school teachers (2005).

## **Awards and honors**

Member of the Brazilian Academy of Sciences (2014)

Simão Mathias medal from the Brazilian Chemical Society (2016)

Medal of the National Order of Scientific Merit from the Brazilian Government (2018)

## **Students and researchers supervised**

Professor Beraldo supervised 11 postdoctoral fellows, 24 PhD theses and 12 master theses. She also supervised 66 graduate students. She has presently 2 PhD, 2 master and 2 graduate students under her supervision.

## **Postdoctoral Fellows**

1. Jennifer Jacon Freitas (2019)
2. Gabrieli Lessa Parrilha (2012-2014 and 2017)
3. Isabella Pires Ferreira (2014 and 2017)
4. Lucas Lopardi Franco (2016)
5. Ligiane Rios Gouvea (2013 - 2014)
6. Angel Amado Recio Despaigne (2013-2014).
7. Jeferson Gomes Da Silva (2013)
8. Josane Alves Lessa (2012).
9. Karina Oliveira Silva Ferraz (2012)
10. Débora Costa Reis (2011)
11. Isolda Maria de Castro Mendes (2007)

### **PhD Students/ Year of Approval**

1. Ana Paula Araujo Oliveira (2020).
2. Luciana Batista de Paulo Sâmia (2018)
3. Ane Francielly Santos (2018)
5. Lenka Victoria Tamayo Lopez (2017)
6. Camila Vargas Garcia (2017)
7. Alexandre Almeida Oliveira (2017)
8. Elisa de Leon Piló (2016)
9. Rafael Pinto Vieira (2013)
10. Jeferson Gomes da Silva (2013).
11. Gabrieli Lessa Parrilha (2012)
12. Josane Alves Lessa (2012)
13. Karina Oliveira Silva Ferraz (2012)
14. Angel Amado Recio Despaigne (2012)
15. Debora Costa Reis (2011)
- 16 Isolda Maria de Castro Mendes (2007)
17. Leticia Regina de Souza Teixeira (2004)
18. Anayive Perez Rebolledo (2004)
19. Ana Mena Barreto Bastos (2004)
20. Wanderlene Ferreira Nacif (2002)
21. Rejane Lúcia de Lima (2002)
22. Ricardo França Furtado da Costa (2001)
- 23 Ruth Helena Ungaretti Borges (1995)
24. Ana Paula Soares Fontes (1993)

## **Master Students/ Year of Approval**

1. Victoria Carolina Romero Colmenares (2020)
2. Andrea Roxana Aguirre Manga (2019)
3. Ana Paula Araújo Oliveira (2016)
4. Luiza Magalhães Fiuza Gomes (2013)
5. Jeferson Gomes da Silva (2009)
6. Karina Silva de Oliveira Ferraz (2008)
7. Leticia Regina de Souza Teixeira (2000)
8. Rejane Lúcia de Lima (1997)
9. Isolda Maria de Castro Mendes (1994)
10. Flávia Cavalieri Machado (1992)
11. João Máximo de Siqueira (1989)
12. Maria Aparecida da Rocha (1988)

## **Publications**

ISI h index = 38 Google Scholar h index = 44

Professor Beraldo is interested in Inorganic Chemistry and Medicinal Inorganic Chemistry. Her research projects include, among others, the design of anticancer, antimicrobial and antiparasitic drug and metallodrug candidates, and the investigation on mechanisms of action and on the interaction of compounds with biomolecules. Professor Beraldo was one of the pioneer researchers in Medicinal Inorganic Chemistry in Brazil. She published 153 articles and three book chapters.

See complete list of publications in <http://lattes.cnpq.br/8218059267505950>

## Selected Publications

1. **BERALDO, HELOISA.** Pharmacological applications of non-radioactive indium(III) complexes: A field yet to be explored. *Coord. Chem. Rev.* 419 (2020) 213375.
2. OLIVEIRA, ANA P.A.; FREITAS, JENNIFER T.J.; DINIZ, RENATA; PESSOA, CLAUDIA; MARANHÃO, SARAH S.; RIBEIRO, JULIANA M.; SOUZA-FAGUNDES, ELAINE M.; **BERALDO, HELOISA.** Triethylphosphinegold(I) complexes with secnidazole-derived thiosemicarbazones: cytotoxic activity against HCT-116 Colorectal Cancer Cells under Hypoxia Conditions. *ACS Omega.* 5, 6 (2020) 2939-2946. This article was chosen to be part of the “Women at the Forefront of Chemistry” First Virtual Issue of ACS Omega.
3. OLIVEIRA, A.P.A.; RECIO-DESPAIGNE, A.; FERREIRA, I.P.; DINIZ, R.; SOUSA, K.A.F.; BASTOS, T.M.; SOARES, M.B.P.; MOREIRA, D.R.M.; **BERALDO, H.** Investigation of the antitrypanosomal effects of 2-formyl-8-hydroxyquinoline-derived hydrazones and their antimony(III) and bismuth(III) complexes. *New J. Chem.* 43 (2019) 18996-19002 (Inside Cover of this N.J. Chem. Issue).
4. OLIVEIRA, ALEXANDRE A.; PERDIGÃO, GABRIELE M.C.; RODRIGUES, LUANA E.; DA SILVA, JEFERSON G.; SOUZA-FAGUNDES, ELAINE M.; TAKAHASHI, JACQUELINE A.; ROCHA, WILLIAN R.; **BERALDO, HELOISA.** Cytotoxic and antimicrobial effects of indium(III) complexes with 2-acetylpyridine-derived thiosemicarbazones. *Dalton Trans.* (2017) 918-932.
5. FERREIRA, ISABELLA P.; PILÓ, ELISA D.L.; RECIO-DESPAIGNE, ANGEL A. DA SILVA, JEFERSON G.; RAMOS, JONAS P.; MARQUES, LUCAS B.; PRAZERES, PEDRO H.D.M.; TAKAHASHI, JACQUELINE A.; SOUZA-FAGUNDES, ELAINE M.; ROCHA, WILLIAN; **BERALDO, HELOISA.** Bismuth(III) complexes with 2-acetylpyridine- and 2-benzoylpyridine-derived hydrazones: Antimicrobial and cytotoxic activities and effects on the clonogenic survival of human solid tumor cells. *Bioorg. Med. Chem.* 24 (2016) 2988-2998.
6. GOMES, LUIZA M.F.; VIEIRA, RAFAEL P.; JONES, MICHAEL R.; WANG, MICHAEL C.P.; DYRAGER, CHRISTINE; SOUZA-FAGUNDES, ELAINE M.; DA SILVA, JEFERSON G.; STORR, TIM; **BERALDO, HELOISA.** 8-Hydroxyquinoline Schiff-base Compounds as

Antioxidants and Modulators of Copper-Mediated A $\beta$  Peptide Aggregation. *J. Inorg. Biochem.* 119 (2014)106-116.

7. PARRILHA, GABRIELI L.; FERRAZ, KARINA S.O.; LESSA, JOSANE A.; DE OLIVEIRA, KELLY N.; RODRIGUES, BERNARDO L. ; RAMOS, JONAS P.; SOUZA-FAGUNDES, ELAINE M.; OTT, INGO; **BERALDO, HELOISA**. Metal complexes with 2-acetylpyridine-*N*(4)-ortho-chlorophenylthiosemicarbazone: cytotoxicity and effect on the enzymatic activity of thioredoxin reductase and glutathione reductase. *Eur. J. Med. Chem.* 84 (2014) 537-544.

8. DESPAIGNE, ANGEL A.R.; PARRILHA, GABRIELI L.; IZIDORO, JANS B.; DA COSTA, PRYSCILA R.; DOS SANTOS, RAQUEL G.; PIRO, OSCAR E.; CASTELLANO, EDUARDO E.; ROCHA, WILLIAN R.; **BERALDO, HELOISA** 2-Acetylpyridine- and 2-benzoylpyridine-derived hydrazones and their gallium(III) complexes are highly cytotoxic to glioma cells. *Eur. J. Med. Chem.* 50 (2012) 163-172.

9. SOARES, MARCELLA A.; LESSA, JOSANE A.; MENDES, ISOLDA C.; DA SILVA, JEFERSON G.; DOS SANTOS, RAQUEL G.; SALUM, LÍVIA B.; DAGHESTANI, HIKMAT; ANDRICOPULO, ADRIANO D.; DAY, BILLY W.; VOGT, ANDREAS; PESQUERO, JORGE L.; ROCHA, WILLIAN R.; **BERALDO, HELOISA**. N4-Phenyl-substituted 2-acetylpyridine thiosemicarbazones: Cytotoxicity against human tumor cells, structure activity relationship studies and investigation on the mechanism of action. *Bioorg. Med. Chem.* 20 (2012) 3396-3409.

10. LESSA, JOSANE A.; GUERRA, JULIANA C.; DE MIRANDA, LUANA F.; ROMEIRO, CARLA F.D.; DA SILVA, JEFERSON G.; MENDES, ISOLDA C. ; SPEZIALI, NIVALDO L. ; SOUZA-FAGUNDES, ELAINE M.; **BERALDO, HELOISA**. Gold(I) complexes with thiosemicarbazones: Cytotoxicity against human tumor cell lines and inhibition of thioredoxin reductase activity. *J. Inorg. Biochem.* 105 (2011) 1729-1739.

11. REIS, DÉBORA C.; PINTO, MAURO C.X.; SOUZA-FAGUNDES, ELAINE M.; WARDELL, SOLANGE M.S.V.; WARDELL, JAMES L.; **BERALDO, HELOISA**. Antimony(III) complexes with 2-benzoylpyridine-derived thiosemicarbazones: Cytotoxicity against human leukemia cell lines. *Eur. J. Med. Chem.* 45 (2010) 3904-3910.

12. LESSA, JOSANE A.; MENDES, ISOLDA C.; DA SILVA, PAULO R.O.; SOARES, MARCELLA A.; DOS SANTOS, RAQUEL G.; SPEZIALI, NIVALDO L.; ROMEIRO, NELILMA C.; BARREIRO, ELIEZER J.; **BERALDO, HELOISA**. 2-Acetylpyridine thiosemicarbazones: Cytotoxic activity in nanomolar doses against malignant gliomas. *Eur. J. Med. Chem.* 45 (2010) 5671-5677.
13. MENDES, ISOLDA C.; SOARES, MARCELA A.; DOS SANTOS, RAQUEL G.; PINHEIRO, CARLOS; **BERALDO, HELOISA**. Gallium(III) complexes of 2-pyridineformamide thiosemicarbazones: cytotoxic activity against malignant glioblastoma. *Eur. J. Med. Chem.* 44 (2009) 1870-1877.
14. REBOLLEDO, ANAYIVE.; VIEITES, MARISOL.; GAMBINO, DINORAH.; PIRO, OSCAR.; CASTELLANO, EDUARDO.; ZANI, CARLOS.; SOUZAFAGUNDES, ELAINE.; TEIXEIRA, LETÍCIA.; BATISTA, ALZIR.; **BERALDO, HELOISA**. Palladium(II) complexes of 2-benzoylpyridine-derived thiosemicarbazones: spectral characterization, structural studies and cytotoxic activity. *J. Inorg. Biochem.* 99 (2005) 698-706.
15. **BERALDO, H.**; GARNIER-SUILLEROT, A.; TOSI, L.; LAVELLE, F. Iron(III)-adriamycin and iron(III)-daunorubicin complexes: physicochemical characteristics, interaction with DNA, and antitumor activity. *Biochemistry* 24 (1985) 284-289.

### **Book Chapters**

- 1 Rafael Pinto Vieira; Heloisa Beraldo. Design of Schiff Base-derived Ligands: Applications in Therapeutics and Medical Diagnosis. In: Tim Storr. *Ligand Design in Medicinal Inorganic Chemistry*. 1ed.: John Wiley & Sons, Ltd, 2014, p. 175-204.
- 2 Heloisa Beraldo. Metal coordination: a strategy for drug design. In: Ana Lucia Ramalho Mercê; Judith Felcman; María Angeles Lobo Recio. (Org.). *Molecular and Supramolecular Bioinorganic Chemistry: Applications in Medical Sciences*. Nova York: Nova Publishers, 2009, p. 137-221.
- 3 Heloisa Beraldo; Geraldo M. de Lima Anti-fungal Activity of Organotin Compounds. In: Alwyn Davies; Marcel Gielen; Keith Pannell and Edward Tiekink. (Org.). *Tin Chemistry*



- Fundamentals, Applications and Frontiers. Sussex: Wiley, 2008, p. 443-453. Book Chapters

## **Selected Lectures and Seminars**

1. First Congress on Biodiversity and Sustainability. Bioinspiration in Medicinal Inorganic Chemistry. Universidade Federal de Minas Gerais. Opening Plenary Lecture, 2019. Belo Horizonte, Brazil.
2. I Congresso de Mulheres na Ciência Universidade Federal de Minas Gerais (I Women in Science Congress) Plenary Lecture, 2018. Belo Horizonte, Brazil.
2. 39<sup>th</sup> Annual Meeting of the Brazilian Chemical Society. The role of Inorganic Chemistry in Drug Discovery. Opening Plenary Lecture, 2016. Goiânia, Brazil.
3. XVIII Brazilian Meeting on Inorganic Chemistry Strategies of Inorganic Chemistry for the Design of Anticancer Drug Candidates Invited Lecture, 2016. Águas de São Pedro, Brazil.
4. 5th Latin American Symposium on Coordination and Organometallic Chemistry, Angra dos Reis, Brazil. Schiff base-derived ligands and metal complexes: relevance in Medicinal Inorganic Chemistry. Invited Lecture, 2015. Angra dos Reis, Brazil.
5. International Year of Crystallography at Universidade Federal de Minas Gerais. Contributions of Crystallography to Medicinal Chemistry. Seminar, 2014. Belo Horizonte, Brazil.
6. Forum Interacional Mulheres em Ciências e Engenharia (International Forum Women in Sciences and Engineering), Universidade Federal de Minas Gerais, Plenary Lecture, 2014. Belo Horizonte, Brazil.
7. II Congresso de Ciências Farmacêuticas do Brasil Central (II Congresso on Pharmaceutical Science of Central Brazil). Estratégias da Química Inorgânica para o Desenvolvimento de Novos Candidatos a Fármacos e Metalofármacos (Strategies of Inorganic Chemistry for the development of new drug and metallodrug candidates). Invited Lecture, 2013. Goiânia, Brazil.
8. XIX Escola de Verão de Química Medicinal (XIX Summer School on Pharmaceutical and Medicinal Chemistry). Abordagens da Química Inorgânica para o Desenvolvimento de novos

Fármacos Anti-Alzheimer (Approaches of Inorganic Chemistry for the development of new anti-Alzheimer drugs). Plenary Lecture, 2013. Faculdade de Farmácia, Universidade Federal do Rio de Janeiro, Brazil.

9. 243<sup>rd</sup> American Chemical Society Meeting. Gold- and gallium-based atitumor drug candidates: potential enzyme inhibitors. Keynote Lecture, 2012. Dan Diego, CA, USA.

10. XVI Brazilian Meeting on Inorganic Chemistry. Some contributions of Inorganic Chemistry to Drug Discovery. Invited Lecture, 2012. Florianópolis, Brazil.

11. 8th International Congress of Pharmaceutical Sciences. Metal Compounds in Medicinal Chemistry. Invited Lecture, 2011. Ribeirão Preto, Brazil.

12. Workshop on Synthetic Inorganic Chemistry. Bento Gonçalves, RS, Brazil. Syntheses of ligands and metal complexes of interest in Medicinal Inorganic Chemistry. Plenary Lecture, 2011

13. Seminaires du Laboratoire de Physique et Chimie Biomoléculaire et Cellulaire, Université Paris XIII. La complexation aux métaux: une stratégie de conception de nouveaux médicaments (Metal Coordination as a strategy for drug design). Seminar, 2010, Paris, France.

14. 1o Workshop de Síntese Orgânica do Norte e Nordeste. A Química Inorgânica unindo-se à Química Orgânica no planejamento de fármacos (Inorganic Chemistry joining Organic Chemistry in drug design). Plenary Lecture, 2008. Slvador, Brazil.

15. XIV Escola de Verão em Química Farmacêutica e Medicinal (XIV Summer School on Pharmaceutical and Medicinal Chemistry). Química Bioinorgânica Medicinal (Bioinorganic Medicinal Chemistry). Workshop, 2008. Rio de Janeiro, Brazil.

16. CYTED PROSUL Research Program: 50 years of Facultad de Farmacia y Bioquímica, Universidad de Buenos Aires. Metal coordination: a strategy for drug design. Seminar, 2007, Buenos Aires, Argentina.

17. IX Escola de Verão em Química Farmacêutica e Medicinal (IX Summer School on Pharmaceutical and Medicinal Chemistry). Contribuições da Química Inorgânica para a Química Medicinal (Contributions of Inorganic Chemistry to Medicinal Chemistry). Plenary Lecture, 2003. Rio de Janeiro, Brazil.

18. Seminarios Facultad de Química, Universidad de la Republica, Uruguay. Thiosemicarbazones and their metal complexes: structure, biological activity and mechanisms of action. Seminar, 2002, Montevideo, Uruguay.
19. Seminaires Laboratoire de Physique et Chimie Biomoléculaire et Cellulaire, Université Paris XIII. Complexes métalliques de thiosemicarbazones et bis(thiosemicarbazones) ayant une activité biologique (Metal complexes of thiosemicarbazones and *bis*(thiosemicarbazones) presenting biological activity). 1998, Seminar, Paris, France.
20. X Brazilian Meeting on Inorganic Chemistry. Achievements of Inorganic Chemistry in Brazil and Prospects for the 21st Century. Keynote Lecture, 1998, Florianópolis Brazil.
21. ICCC International Conference on Coordination Chemistry ICCC. Metal complexes of bis(thiosemicarbazones): pharmacological applications. Keynote Lecture, 1997, Santiago, Chile.
22. Seminaires du Laboratoire de Physique et Chimie Biomoléculaire et Cellulaire, Université Paris XIII. Complexes métalliques de quelques ligandes présentant une activité biologique (Metal complexes of some bioactive ligands). Seminar, 1992, Paris, France.