

JUANITA FREER CALDERON

DOCTOR (Ph.D.), UNIVERSITY OF DETROIT, USA - 1980

LÍNEA(S) DE INVESTIGACIÓN O ÁREAS DE TRABAJO

- ✓ QUÍMICA DE LA MADERA. ANÁLISIS QUÍMICO DE MATERIAL LIGNOCELULOSICO

NÚMERO DE TESIS DE DOCTORADO DIRIGIDAS EN LOS ÚLTIMOS 10 AÑOS (FINALIZADAS)

Rosario del P. Castillo F., 26-08-08 Graduado

“Herramientas Quimiométricas para la Clasificación de Genotipos de Eucaliptos Predicción de su Resistencia al Frío”

NÚMERO DE TESIS DIRIGIDAS O ACTIVIDAD FORMATIVA EQUIVALENTE GUIADAS EN EL PROGRAMA, EN LOS ÚLTIMOS 10 AÑOS (FINALIZADAS)

- ✓ Fabio Araya C., (Doctorado), 23-08-2012

“Determinación de Parámetros Relevantes para la Eficiencia de la Hidrólisis Enzimática de Pulpas Obtenidas por Procesos Combinado Autohidrólisis-kraft de Eucalyptus globulus”

- ✓ Victoria Melín C., (Doctorado) 12-01-2012

“Determinación de Capacidad de las Catecolaminas Biológicas para Amplificar la Reacción de Fenton”

LISTADO DE PUBLICACIONES EN LOS ÚLTIMOS 10 AÑOS.

Mariel Monrroy, Renán García, Eduardo Troncoso, Juanita Freer. *“Fourier transformed near infrared (FT-NIR) spectroscopy for the estimation of parameters in pretreated lignocellulosic materials for bioethanol production”*, **Journal of Chemical Technology & Biotechnology. Journal of biological Inorganic Chemistry**. DOI: 10.1002/jctb.4427

Rosario del P. Castillo, Carolina Parra, Eduardo Troncoso, Heriberto Franco, Samuel Peña and Juanita Freer. *“NIR spectroscopy applied to the characterization and selection of pre-treated materials from multiple lignocellulosic resources for bioethanol production”* .59(1):2347-(2014)

Victoria Melin, David Contreras, Adolfo Henríquez, Juanita Freer. *"pH dependence of veratryl alcohol degradation by Fenton and Fenton like reaction driven by catecholamines"*. **Journal of biological Inorganic Chemistry. Aceptado**

Castro, Jean Franco; Parra, Carolina; Yáñez-S, Mauricio; Rojas, Jonathan; Teixeira, Regis; Baeza, Jaime; Freer, Juanita. *"Optimal pretreatment of Eucalyptus globulus by hydrothermolysis and alkaline extraction for microbial production of ethanol and xylitol"*. **Industrial & Engineering Chemistry Research 52: 5713-5720 (2013)**

Mauricio Yáñez-S, Jonathan Rojas, Jean Castro, Arthur Ragauskas, Jaime Baeza, and Juanita Freer. *"Fuel ethanol production from Eucalyptus globulus wood by autocatalyzed organosolv pretreatment ethanol-water and SSF"*. **J. Chem. Technol. Biotechnolog (2013): 88(1): 39-48**

Mariel Monrroy, Pamela González, Jaime Baeza and Juanita Freer. *"Effect of Organosolv Process on Structural Characteristics and Enzymatic Digestibility in Pinus radiata Wood"* **Journal of Materials Science and Engineering B 2 (2) (2012) 112-125**

H. Franco, A. Ferraz, A. M. F. Milagros, W. Carvallho, J. Freer, J. Baeza, and Regis Teixeira Mendonça. *"Alkaline sulfite/antraquinone pretreatment followed by disk refining of Pinus radiata and Pinus caribaea wood chips for biochemical ethanol production"*. **J. Chem. Technol. Biotechnolog (2012): 87:651-657**

C.Puentes, M. Norambuena, R. Teixeira Mendonça; J. P. Elissetche, J. Freer. *"Biodegradation of Eucalyptus globulus and E. nitens by Ceriporiopsis subvermispora and lignin characterization by thoacidolysis and CuO oxidation"* **Wood Research (2012) 57(1): 91-100.**

Mariel Monrroy, Jose Renán García, Regis Teixeira Mendonça, Jaime Baeza, Juanita Freer. *"Kraft pulping of Eucalyptus globulus as a pretreatment for bioethanol production by simultaneous saccharification and fermentation"*. **J. Chil. Chem. Soc.**, (2012) **58**, (2): 828-83.

Roberto Valenzuela, Jean Franco Castro, Carolina Parra, Jaime Baeza, Nelson Durán. *"β-Glucosidase immobilisation on synthetic superparamagnetic magnetitenano particles and their application in saccharification of wheat straw and Eucalyptus globulus pulps"*. **Journal of Experimental Nanoscience** (2012) 1–9.

Claudio Salazar, Regis Teixeira Mendonça¹, Jaime Baeza, and Juanita Freer. *"Kraft pulping and ECF bleaching of Eucalyptus globulus pretreated by the white-rot fungus Ceriporiopsis subvermisporea. Acta Scientiarum"*. **Technology Maringá** (2012) **34**(3): 277-281. 2012

Rosario del P. Castillo, Jaime Baeza, Joselyn Rubilar, Álvaro Rivera, and Juanita Freer. *"Infrared spectroscopy as alternative to wet chemical analysis to characterize Eucalyptus globulus pulps and predict their ethanol yield for a simultaneous saccharification and fermentation process"* **Applied Biochemistry and Biotechnology** (2012) 168:2028–2042

Heriberto Franco, Regis Teixeira Mendonça, Priscyla D. Marcato, Nelson Durán, C Juanita Freer, and Jaime Baeza. *"Diluted acid pretreatment of Pinus radiata for bioethanol production using immobilized Saccharomyces cerevisiae IR2-9 in a simultaneous saccharification and fermentation process"*. **J. Chil. Chem. Soc.**, **56** (2) (2011) 682-687.

Mariel Monrroy, Isidora Ortega, Mario Ramírez, Jaime Baeza, Juanita Freer. *"Structural change in wood by brown rot fungi and effect on enzymatic hydrolysis"*. **Enzyme and Microbial Technology** **49** (2011) 472– 477

D. Contreras, J. Rodríguez, L. Basaez, J. Freer, R. Valenzuela, H. Mansilla and P. Vanýsek "New insights in the dihydroxybenzenes-driven Fenton reaction: electrochemical study of interaction between dihydroxybenzenes and Fe(III)". **Water Science & Technology** **64(10): 2103-2108(2011)**

Nelson Durán, Ana P. Lemes, Marcela Durán, Juanita Freer, Jaime Baeza. "A minireview of cellulose nanocrystals and its potential integration as co-product in bioethanol production", **J. Chil. Chem. Soc.**, **56, Nº 2 (2011) 672-677.**

Claudio Muñoz, Jaime Baeza, Juanita Freer, Regis Teixeira Mendonça. "Bioethanol production from tension and opposite wood of *Eucalyptus globulus* using organosolv pretreatment and simultaneous saccharification and fermentation". **J. Ind. Microbiolog Biotechnol.** **(2011): 38:1861-1866.**

D. Contreras, J. Rodríguez, L. Basaez, J. Freer, R. Valenzuela, H. Mansilla, P. Vanysek. "New insights in the dihydroxybenzenes-Driven Fenton Reaction: electrochemical study of interaction between dihydroxybenzenes and Fe(III)". **Environ. Technol.**, in press

Mariel Monrroy, Jeniffer Ibañez, Victoria Melin, Jaime Baeza, Regis Teixeira Mendonça, David Contreras and Juanita Freer. "Bioorganosolv Pretreatments of *P. radiata* by a Brown-rot Fungus (*Gloeophyllum trabeum*) and Ethanolysis". **Enzyme and Microbial Technology** **47 11-16 (2010)**

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R. Soto, J. Freer, J. Baeza. *"Evidence of chemical reactions between di- and polyglycidyl ether resins and tannins isolated from Pinus radiata D. Don Bark"*. **Bioresource Technology**, **96(1): 95-101 (2005).**

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LISTADO DE PROYECTOS DE INVESTIGACIÓN EN LOS ÚLTIMOS 10 AÑOS

- ✓ Fondecyt 1131101 (2013-2015).

“Modulation of Fenton reaction in 1,2 dihydroxybenzenes iron complexes: Biomimetic models of oxidative stress in biological systems”.

Coinvestigador.

- ✓ Fondecyt 1130502. (2013-2015)

Synthesis, characterization and photocatalytic activity of nanostructured biox (x=F, Cl, Br, I) for the treatment of wine wastewaters.

Coinvestigador.

- ✓ Programa Bicentenario en Ciencia y Tecnología CONSORCIO BIOENERCEL 08CTE03-(01-012) Coinvestigador-Coordinador subproyecto 08CTE-03-04: Desarrollo de métodos analíticos y de control para el proceso de producción de biocombustibles líquidos de segunda generación. (2009-2015)

- ✓ PROYECTO FONDEF DO9I1200 (2011-2014)

“Obtención de terpenos con actividad antimicótica desde trementina al sulfato para el tratamiento de candidiasis oral”.

Coinvestigador

- ✓ Fase II. PROYECTO FONDEF AF10I1024 (2011-2013).

“Obtención de nutraceuticos a partir de uva para la elaboración de productos funcionales”

Coinvestigador

- ✓ FONDECYT Regular 1110606. (2011-2013)

“Assesment of conventional drinking water treatment for removing trace of organic contaminants from products of extensive use”.

Investigador Principal

- ✓ FONDECYT Regular 1110641 (2011-2012)

“Oxidation of organic matter and simultaneous reduction of metal in organometallic compounds by advanced redox processes”

Coinvestigador

- ✓ FONDECYT Regular 1100898 (2010-2012)

"Lignocellulosic biorefining using Fenton-organosolv processing".

Coinvestigador

- ✓ INNOVA-BIO-BIO. N° 06-PC S1-33 (2006-2011)

"Desarrollo de protocolos para la producción de biomasa de especies forestales de rápido crecimiento y corta rotación para la generación de bioenergía".

Coinvestigador

- ✓ CONSORCIO. 05CTE04-01 Proyecto Genómica Habilidad Pulpable Eucalipto (2005-2011)

Programa Bicentenario en Ciencia y Tecnología.

Coinvestigador

- ✓ FONDECYT 1080303 (2008-2010)

"Bioethanol production from bio-organosolv pretreated lignocellulosic material"

Investigador Principal.

- ✓ FONDECYT 1080230 (2008-2010).

Photo-catalysed oxidation of antibiotics: Mechanisms and Biological testing.

Coinvestigador

- ✓ FONDECYT: proyectos de investigación conjunta en energías renovables no convencionales CHILE-FINLANDIA PBCT/CCF-07. Biocombustibles y biomateriales activos en base a polisacáridos: Producción sustentable e integrada con procesos de celulosa y papel (POLYSMART), Periodo mayo 2008-2010. *Coinvestigador*

- ✓ INNOVA BIO BIO, N° 07-PC S1-1612008 (julio) -2011.

"Obtención de nutraceuticos desde uva para la elaboración de productos funcionales"

Coinvestigador

- ✓ CORFO 07CN13 A-128 (oct 2007-2010)

"Mejoramiento de la Calidad Polifenólica de Vinos de Cepas Tintas: Desarrollo de Nuevas Tecnologías para el Seguimiento de la Madurez de Cosecha y Procesos Fermentativos".

Director

- ✓ FONDECYT 1070492 2007-2010

"Fuel- oriented Biorefinery: Utilization of Agricultural Residues in the Production of Bioethanol"

Coinvestigador

- ✓ INNOVA-BIO-BIO. 05-B1-386 L7 2007-2009

“Desarrollo y utilización de tecnologías para la producción de bioetanol: utilización de residuos agrícolas lignocelulósicos”

Director.

- ✓ INNOVA-BIO-BIO. N° 06-PC S1-33 2006-2011

“Desarrollo de protocolos para la producción de biomasa de especies forestales de rápido crecimiento y corta rotación para la generación de bioenergía”

Coinvestigador

- ✓ CONSORCIO. 05CTE04-01 Proyecto Genómica Habilidad Pulpable Eucalipto. 2005-2010 Programa Bicentenario en Ciencia y Tecnología.

Coinvestigador

- ✓ FONDECYT 1050535 (2005-2007).

“Desarrollo de método de análisis de los ácidos urónicos en madera y pulpa por FTIR.NIR.”

Investigador Principal.

- ✓ FONDECYT 1050941. (2005-2007)

“Biopulpaje Kraft/O2 de maderas de eucalipto pretratadas con hongos de pudrición blanca”

Coinvestigador

- ✓ FONDECYT 1040460 (2004-2007)

“Degradación oxidativa de antibióticos mediante fotocatálisis solar.

Coinvestigador.

- ✓ FONDEF D03I-1103 (2004-2008).

“Desarrollo de herramientas de selección clonal en Eucalyptus globulus, para la industria de la celulosa”.

Coinvestigador

- ✓ INNOVA BIO-BIO-ABENGOA (Agosto 2003-sept 2005)

“Desarrollo de bioetanol, estudio de variables claves del proceso de hidrólisis y fermentación.

Director Miguel Morúa Abengoa –Director Juanita Freer U. de Concepción

✓ FONDECYT 1020161. (2002-2004).

“Desarrollo de método de análisis por FTIR aplicado al análisis de madera”. Investigador Principal.

✓ FONDECYT 7020161. (2002-2004)

Incentivo Cooperación Internacional “Desarrollo de método de análisis por FTIR aplicado al análisis de madera”

Investigador Principal

Patrocinados por la Universidad de Concepción

✓ DIUC 206.021.024-1.0. (2006 -2008)

“Fundamento de un modelo biomimético para la conducción de una reacción de Fenton por dihidroxibencenos con la generación “in situ” de peróxido de hidrógeno.

Coinvestigador

✓ DIUC 204.141.010-1.0 (2004-2006)

“Biopulpaje kraft/O₂ de Eucalyptus globulus pretratado con hongo de pudrición blanca Ceriporiopsis subvermispora y Ganoderma australe”

Coinvestigador

✓ *Proyectos Semilla para grupos de Investigación de la Universidad de Concepción y de la Pontificia Universidad Católica de Valparaíso.*

“Desarrollo de un proceso de producción de bioetanol a partir de recursos forestales”. 2005 Investigador principal

✓ *Grupos de Investigación Avanzada DIUC N° 201.023.028-1.4 (2001-2004)*

“Química y Biotecnología de Recursos Renovables”

Coinvestigador