



Química Física

Áreas de conocimiento: Química Física

Director: Irene Luque Fernández

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Profesorado: CU: 5, PTU:12 ,PTEU: 0, PDI Contratado y Otros:. 5

Grupos de Investigación.

FQM171 BIOFISICA Y BIOTECNOLOGIA MOLECULAR

- Responsable: PEDRO LUIS MATEO ALARCON

BIO223 BIOMOLECULAS

- Responsable: JOSE MANUEL SANCHEZ RUIZ

BIO189 FISICOQUIMICA FARMACEUTICA

- Responsable: BARTOLOME QUINTERO OSSO

FQM361 QUÍMICA FÍSICA BIOMOLECULAR

- Responsable: ANTONIO PARODY MORREALE

Dirección y participación en Proyectos I+D

- 2017 DISEÑO Y DESARROLLO DE NUEVOS INHIBIDORES DEL VIH BASADOS EN PROTEINAS MIMETICAS DE GP41, , 01/01/2017-31/12/2019

Investigador/a ANA ISABEL AZUAGA FORTES

Investigador/a BERTRAND MOREL

Investigador/a OBDULIO LÓPEZ MAYORGA

- 2017 Generating and understanding de novo enzyme functionalities using ancestral proteins as scaffolds, , 01/10/2017-30/09/2020

Coordinador JOSE MANUEL SANCHEZ RUIZ

- 2017 Generating and understanding de novo enzyme functionalities using ancestral proteins as scaffolds, , 01/10/2017-30/09/2020

Investigador/a BEATRIZ IBARRA MOLERO

- 2016 Ingeniería y evolución de enzimas de novo con actividades no naturales, , 01/01/2016-31/12/2018

Investigador/a VALERIA ALEJANDRA RISSO DIRAZAR

- 2016 Identificación y optimización de inhibidores de la gemación vírica: Hacia el desarrollo de antivirales de amplio espectro., , 30/12/2016-29/12/2020

Responsable IRENE LUQUE FERNÁNDEZ

Investigador/a PEDRO LUIS MATEO ALARCON

Investigador/a JOSE CRISTOBAL MARTINEZ HERRERIAS

Investigador/a JAVIER RUIZ SANZ

Investigador/a EVA SANCHEZ COBOS

- 2016 'INGENIERIA Y EVOLUCION DE ENZIMAS DE NOVO CON ACTIVIDADES NO NATURALES', Competitivo, 01/01/2016-31/12/2018

Participante VALERIA ALEJANDRA RISSO DIRAZAR

Responsable JOSE MANUEL SANCHEZ RUIZ

Investigador/a ANGEL LUIS PEY RODRÍGUEZ

Investigador/a BEATRIZ IBARRA MOLERO

- 2016 Towards host-directed broad spectrum antivirals: A multidisciplinary approach for the identification and optimization of virus, Competitivo, 01/12/2016-31/12/2017

Responsable IRENE LUQUE FERNÁNDEZ

- 2016 DISEÑO Y DESARROLLO DE NUEVOS INHIBIDORES DEL VIH BASADOS EN PROTEINAS MIMETICAS DE GP41, Competitivo, 30/12/2016-29/12/2019

Investigador/a ANA ISABEL AZUAGA FORTES

Responsable FRANCISCO CONEJERO LARA

Investigador/a SALVADOR CASARES ATIENZA

- 2016 IDENTIFICACION Y OPTIMIZACION DE INHIBIDORES DE LA GEMACION VIRICA: HACIA EL DESARROLLO DE ANTIVIRALES DE AMPLIO ESPECTRO, Competitivo, 30/12/2016-29/12/2020

Investigador/a PEDRO LUIS MATEO ALARCON

Responsable IRENE LUQUE FERNÁNDEZ

Investigador/a JOSE CRISTOBAL MARTINEZ HERRERIAS

Investigador/a JAVIER RUIZ SANZ

Publicaciones en revistas

- 2017 Articulo: Two-Step Amyloid Aggregation: Sequential Lag Phase Intermediates, Scientific Reports, 7, 40065, 1-11



SALVADOR CASARES ATIENZA

- 2017 Articulo: Purification and characterization of *Pseudomonas aeruginosa* LasR expressed in acyl-homoserine lactone free *Escherichia coli* cultures, *Protein Expression and Purification*, 130, , 107-114
BERTRAND MOREL

- 2017 Articulo: Versatile synthesis and enlargement of functionalized distorted heptagon-containing nanographenes, *Chemical Science*, 8, , 1068-1074

LUIS CROVETTO MONTOYA

- 2017 Articulo: Magnetite nanoparticles biominerilization in the presence of the magnetosome membrane protein MamC: Effect of protein aggregation and protein structure on magnetite formation, *Crystal Growth and Design*, 17, , 1620-1629

ANA ISABEL AZUAGA FORTES

SALVADOR CASARES ATIENZA

- 2017 Articulo: Sublingual Priming with a HIV gp41-Based Subunit Vaccine Elicits Mucosal Antibodies and Persistent B Memory Responses in Non-Human Primates., *Frontiers in Immunology*, 8, 63, -

FRANCISCO CONEJERO LARA

IRENE LUQUE FERNÁNDEZ

PEDRO LUIS MATEO ALARCON

SARA CRESPILO TORREÑO

- 2017 Articulo: Site-to-site interdomain communication may mediate different loss-of-function mechanisms in a cancer-associated NQO1 polymorphism., *Scientific Reports*, 7, , 44532-

ANGEL LUIS PEY RODRÍGUEZ

ENCARNACIÓN MEDINA CARMONA

- 2017 Articulo: Structural Basis of the Oncogenic Interaction of Phosphatase PRL-1 with the Magnesium Transporter CNNM2., *Journal of Biological Chemistry*, 292, 3, 786-801

ANGEL LUIS PEY RODRÍGUEZ

- 2017 Articulo: The influence of N-terminal acetylation on micelle-induced conformational changes and aggregation of α -Synuclein, *PLoS ONE*, 12, 5, e0178576-

BERTRAND MOREL

DAVID RUZAFIA RUIZ

FRANCISCO CONEJERO LARA

- 2017 Articulo: Understanding the contribution of disulfide bridges to the folding and misfolding of an anti-Abeta scFv, *Protein Science*, 26, , 1138-1149

JOSE CRISTOBAL MARTINEZ HERRERIAS

- 2017 Articulo: Using Resurrected Ancestral Proviral Proteins to Engineer Virus Resistance, *Cell Reports*, 19, 6, 1247-1256

ASUNCIÓN DELGADO DELGADO

BEATRIZ IBARRA MOLERO

JOSE MANUEL SANCHEZ RUIZ

- 2017 Articulo: Fast folding and slow unfolding of a resurrected Precambrian protein, *Proceedings of the National Academy of Sciences of the United States of America*, 114, 21, E4122-E4123

BEATRIZ IBARRA MOLERO

JOSE MANUEL SANCHEZ RUIZ

MARÍA GLORIA GÁMIZ ARCO

MARIA LUISA ROMERO ROMERO

- 2017 Articulo: De Novo Active Sites for Resurrected Precambrian Enzymes, *Nature Communications*, 0, 0, 0-0

JOSE MANUEL SANCHEZ RUIZ

VALERIA ALEJANDRA RISSO DIRAZAR

- 2017 Articulo: Modification of the peroxygenative:peroxidative activity ratio in the unspecific peroxygenase from *Agrocybe aegerita* by structure-guided evolution., *Protein Engineering, Design & Selection*, 30, 3, 191-198

MIGUEL ARCÁNGEL PALOMINO LÓPEZ

- 2016 Articulo: Common features in the folding and misfolding of PDZ domains and beyond: the modulatory effect of domain swapping and extra-elements, *Scientific Reports*, 6, , 19242-

JAVIER MURCIANO CALLES

JOSE CRISTOBAL MARTINEZ HERRERIAS

- 2016 Articulo: Identification of ligands for bacterial sensor proteins, *CURRENT GENETICS*, 62, 1, 143-147

BERTRAND MOREL

- 2016 Articulo: Identification of a chemoreceptor that specifically mediates chemotaxis towards metabolizable purine derivatives, *Molecular Microbiology*, 99, 1, 34-42

BERTRAND MOREL

- 2016 Articulo: The paralogous ArsR1 and ArsR2 regulators of *Pseudomonas putida* KT2440 as basis for arsenic biosensor development, *Applied and Environmental Microbiology*, 82, 14, 4133-4144

BERTRAND MOREL



- 2016 Artículo: Two different mechanisms mediate chemotaxis to inorganic phosphate in *Pseudomonas aeruginosa*, *Scientific Reports*, , , 6:28967-
BERTRAND MOREL
- 2016 Artículo: *Caenorhabditis elegans* alanine:glyoxylate aminotransferase is a mitochondrial and cold-adapted ortholog of peroxisomal human AGT1 key to understand between-species divergence in glyoxylate metabolism, *Biochimica et biophysica acta. Proteins and proteomics*, 1864, , 1195-1205
ANGEL LUIS PEY RODRÍGUEZ
NOEL MESA TORRES
- 2016 Review: Natural Small Molecules as Stabilizers and Activators of Cancer-Associated NQO1 Polymorphisms., *Current Drug Targets*, 17, 13, 1506-1514
ANGEL LUIS PEY RODRÍGUEZ
ENCARNACIÓN MEDINA CARMONA
- 2016 Artículo: Kinetic stability of cystathionine beta-synthase can be modulated by structural analogs of S-adenosylmethionine: Potential approach to pharmacological chaperone therapy for homocystinuria., *BIOCHIMIE*, 126, , 6-13
ANGEL LUIS PEY RODRÍGUEZ
- 2016 Artículo: Conformational dynamics is key to understanding loss-of-function of NQO1 cancer-associated polymorphisms and its correction by pharmacological ligands., *Scientific Reports*, 6, , 20331-20331
ANGEL LUIS PEY RODRÍGUEZ
ENCARNACIÓN MEDINA CARMONA
NOEL MESA TORRES
- 2016 Review: Galactokinase promiscuity: a question of flexibility?, *Biochemical Society transactions*, 44, 1, 116-122
ANGEL LUIS PEY RODRÍGUEZ
- 2016 Review: Targeting Cystathionine Beta-Synthase Misfolding in Homocystinuria by Small Ligands: State of the Art and Future Directions., *Current Drug Targets*, 17, 13, 1455-1470
ANGEL LUIS PEY RODRÍGUEZ
- 2016 Artículo: Experimental and computational evidence on conformational fluctuations as a source of catalytic defects in genetic diseases, *RSC Advances*, 6, , 58604-58612
ANGEL LUIS PEY RODRÍGUEZ
- 2016 Artículo: The chondroitin sulfate/dermatan sulfate 4-O-endosulfatase from marine bacterium *Vibrio* sp FC509 is a dimeric species: Biophysical characterization of an endosulfatase., *Biochimie*, 131, , 85-95
ANGEL LUIS PEY RODRÍGUEZ
ENCARNACIÓN MEDINA CARMONA
- 2016 Artículo: Molecular basis of classic galactosemia from the structure of human galactose 1-phosphate uridylyltransferase, *Human Molecular Genetics*, 25, 11, 2234-2244
ANGEL LUIS PEY RODRÍGUEZ
- 2016 Artículo: A Panel of TrpB Biocatalysts Derived from Tryptophan Synthase through the Transfer of Mutations that Mimic Allosteric Activation, *Angewandte Chemie (International ed. Print)*, 55, , 11577-11581
JAVIER MURCIANO CALLES
- 2016 Artículo: Tryptophan synthase uses an atypical mechanism to achieve substrate specificity, *Biochemistry (Easton)*, 55, , 7043-7046
JAVIER MURCIANO CALLES
- 2016 Artículo: From Binding-Induced Dynamic Effects in SH3 Structures to Evolutionary Conserved Sectors, *PLoS Computational Biology*, 12, 5, e1004938-
ANA MARÍA ZAFRA RUANO
IRENE LUQUE FERNÁNDEZ
JAVIER RUIZ SANZ
- 2016 Artículo: Selection for Protein Kinetic Stability Connects Denaturation Temperatures to Organismal Temperatures and Provides Clues to Archaeal Life, *PLOS ONE*, 11, 6, e0156657-
BEATRIZ IBARRA MOLERO
JOSE MANUEL SANCHEZ RUIZ
MARIA LUISA ROMERO ROMERO
VALERIA ALEJANDRA RISSO DIRAZAR
- 2016 Artículo: Engineering ancestral protein hyperstability, *Biochemical Journal*, 473, 20, 3611-3620
BEATRIZ IBARRA MOLERO
JOSE MANUEL SANCHEZ RUIZ
MARIA LUISA ROMERO ROMERO
VALERIA ALEJANDRA RISSO DIRAZAR
- 2016 Artículo: Molecular and Physicochemical Factors Governing Solubility of the HIV gp41 Ectodomain, *Biophysical Journal*, 111, 4, 700-709
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FRANCISCO CONEJERO LARA

PEDRO LUIS MATEO ALARCON

SALVADOR CASARES ATIENZA

SARA CRESPILO TORREÑO

- 2016 Artículo: Modern analysis of protein folding by differential scanning calorimetry, Methods in Enzymology, 567, , 281-318

BEATRIZ IBARRA MOLERO

JOSE MANUEL SANCHEZ RUIZ

- 2016 Artículo: A new physiological role for the DNA molecule as a protector against drying stress in desiccation-tolerant microorganisms, Frontiers in Microbiology, 7, 22/12/2016, 1-12

IRENE LUQUE FERNÁNDEZ

- 2016 Artículo: Biosynthesis of the acetyl-CoA carboxylase-inhibiting antibiotic, andrimid, in *Serratia* is regulated by Hfq and the LysR-type transcriptional regulator, AdmX, Environmental Microbiology (Online), 18, 11, 3635-3650

BERTRAND MOREL

- 2016 Artículo: Assessment of the contribution of chemoreceptor-based signalling to biofilm formation, Environmental Microbiology (Online), 18, 10, 3355-3372

BERTRAND MOREL

- 2016 Artículo: Stapled helical o-OPE foldamers as new circularly polarized luminescence emitters based on carbophilic interactions with Ag(I)-sensitivity, Chemical Science, 7, , 5663-5670

LUIS CROVETTO MONTOYA

- 2016 Artículo: Pyridoxal-5-phosphate deficiency is associated with hyperhomocysteinemia independently of antioxidant, riboflavin, cobalamine, and folate status in critically ill patients with systemic inflammatory response syndrome at seventh day of Intensive Care Unit , Clinical Nutrition, , , -

BARTOLOME QUINTERO OSSO

- 2016 Artículo: Pyridoxal-5-phosphate deficiency is associated with hyperhomocysteinemia independently of antioxidant, riboflavin, cobalamine, and folate status in critically ill patients with systemic inflammatory response syndrome at seventh day of Intensive Care Unit , Clinical Nutrition, , , 706-712

BARTOLOME QUINTERO OSSO

Libros (con ISBN)

- 2016 Introducción a la Química Física. Teoría y problemas: EDITORIAL TÉCNICA AVICAM, FACULTAD DE CIENCIAS UNIVERSIDAD DE GRANADA, 2016, 978-84-16535-75-0
JUAN LLOR ESTEBAN

Capítulos de libros (con ISBN)

- 2016 Titulo Capítulo: Calorimetric approaches to studying complex protein structure-function stability relationships in conformational diseases: the case of cystathionine β -synthase., Titulo Libro: Biocalorimetry: foundations and contemporary approaches: Taylor & Francis, , 2016, 9781482246650
ANGEL LUIS PEY RODRÍGUEZ
- 2016 Titulo Capítulo: Directed evolution of an allosteric tryptophan synthase enzyme to create a platform for synthesis of non-canonical amino acids, Titulo Libro: Directed Enzyme Evolution: Advances and Applications: Springer, , 2016, 978-3-319-50411-7
JAVIER MURCIANO CALLES
- 2016 Titulo Capítulo: RESURRECTED ANCESTRAL PROTEINS AS SCAFFOLDS FOR PROTEIN ENGINEERING, Titulo Libro: Directed Enzyme Evolution: Advances and Applications: Springer, , 2016, 978-3-319-50411-7
JOSE MANUEL SANCHEZ RUIZ
- 2016 Titulo Capítulo: VALERIA ALEJANDRA RISSO DIRAZAR
- 2016 Titulo Capítulo: Kinetic stability of variant enzymes, Titulo Libro: Understanding enzymes: Function, design, engineering and analysis: , , 2016,
JOSE MANUEL SANCHEZ RUIZ

Contribuciones en congresos

- 2017 Comunicación en congreso: Two different mechanisms, based on direct and indirect signal recognition, mediate *Pseudomonas aeruginosa* chemotaxis to the major virulence signal inorganic phosphate, Bacterial Locomotion and Signal Transduction (BLAST) XIV, 15/01/2017, New Orleans (Estados Unidos), Congreso
BERTRAND MOREL
- 2017 Comunicación en congreso: Asociación de los niveles de Zinc plasmático y la expresión de transportadores de Zinc, con la edad y el Síndrome de Respuesta Inflamatoria Sistémica., 32 Congreso Nacional SENPE, 18/05/2017, Valladolid, España, Congreso
BARTOLOME QUINTERO OSSO
- 2017 Ponencia en Congreso: Biotechnological applications of resurrected ancestral proteins, XL Congreso de



- la Sociedad Española de Bioquímica y Biología Molecular, 23/10/2017, . Barcelona, Congreso
JOSE MANUEL SANCHEZ RUIZ
- 2017 Ponencia en Congreso: Biotechnological applications of resurrected ancestral proteins, Workshop on evolution inspired protein engineering, 17/09/2017, GOSAU, AUSTRIA, Congreso
 - JOSE MANUEL SANCHEZ RUIZ
 - 2017 Ponencia en Congreso: Biotechnological applications of resurrected ancestral proteins, 254 American Chemical Society National Meeting, 20/08/2017, WASHINGTON (EEUU), Congreso
 - JOSE MANUEL SANCHEZ RUIZ
 - 2016 Poster en Congreso: MÉTODO DIAGNÓSTICO ÁGIL DE DEFICIENCIA DE COBRE MEDIANTE QUANTUM DOTS EN PACIENTE CRÍTICO, 32 CONGRESO NACIONAL DE LA SENPE 2016, 05/05/2016, BARCELONA, Congreso
 - BARTOLOMÉ QUINTERO OSSO
 - 2016 Conferencias impartidas: Rescue of cancer associated NQO1 by targeting protein dynamics, stability and function, Biophysics Seminar, 12/02/2016, , Congreso
 - ANGEL LUIS PEY RODRÍGUEZ
 - 2016 Poster en Congreso: Directed evolution of the β -subunit of tryptophan synthase for production of noncanonical amino acids, Gordon Research Conference - Organic Reactions and Processes, 17/07/2016, Easton, Massachusetts, USA, Congreso
 - JAVIER MURCIANO CALLES
 - 2016 Poster en Congreso: Shortcutting Biosynthesis: Engineering a single enzyme route to alkaloid precursors, Gordon Research Conference: Marine Natural Products., 05/03/2016, Ventura, California, USA, Congreso
 - JAVIER MURCIANO CALLES
 - 2016 Poster en Congreso: Directed evolution reactivates the tryptophan synthase β -subunit through conversion of allosteric potential into catalytic activity, Salk/Fondation Ipsen/Science Symposium on Biological Complexity: Synthetic Biology, 20/01/2016, San Diego, CA, USA, Congreso
 - JAVIER MURCIANO CALLES
 - 2016 Poster en Congreso: Caracterización de la estructura y la citotoxicidad de oligómeros tempranos de Abeta40 y Abeta42, XXXIX Congreso de la Sociedad Española de Bioquímica y Biología Molecular, 05/09/2016, - Salamanca, España, Congreso
 - DAVID RUZAFA RUIZ
 - BERTRAND MOREL
 - FRANCISCO CONEJERO LARA
 - 2016 Ponencia en Congreso: Implications of ancestral sequence reconstruction for protein engineering, V Latin American Protein Society Meeting, 07/11/2016, Rio de Janeiro (Brasil), Congreso
 - JOSE MANUEL SANCHEZ RUIZ