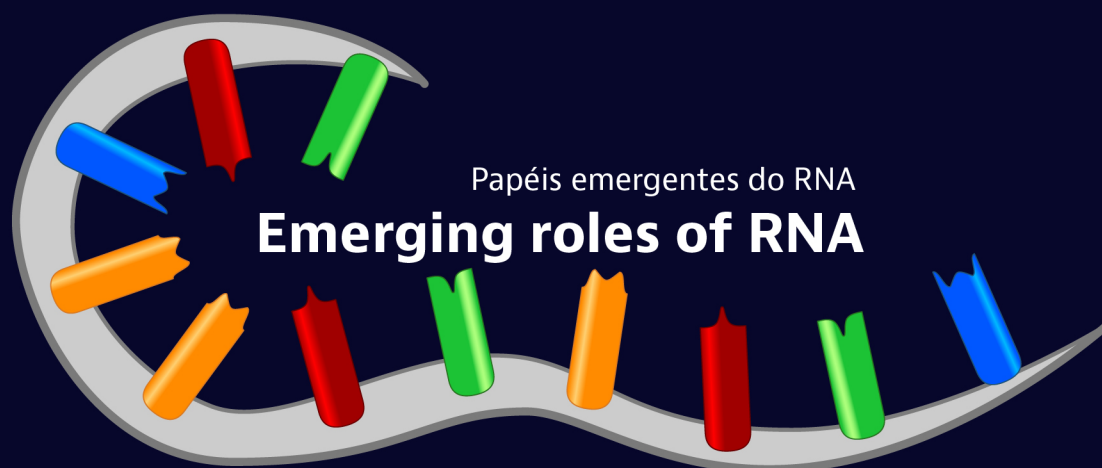




HONORED: Maria Paula Cruz Schneider

Genética^{69ºCBG} 2024

International Congress of the Brazilian Genetics Society

20a23|08|2024 🍁 Campos do Jordão Convention Center|SP

e-Book

Realização



Apoio



Patrocínio



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Apoio



Patrocínio



Scientific program

08h00 – 18h00

REGISTRATION DESK OPEN

Grande Salão

14h00 – 18h00

EXHIBITION FAIR OPEN

09h00 – 12h00

MINI COURSES

Métodos genéticos de estudo para doenças psiquiátricas

Courchevel Room

Sintia I. Belangero, UNIFESP, São Paulo, SP

Introdução ao sequenciamento por nanoporos

Bariloche Room

Douglas Moraes Mendel Soares, USP, São Paulo SP

Introdução à análise de RNA para diagnóstico de doenças genéticas Mendelianas

Chilan Room

Giovana Torrezan, A.C.Camargo e Larissa Dias de Souza, A.C.Camargo, São Paulo, SP

Sistemática filogenética molecular e a previsibilidade que torna a biologia uma ciência

Zermat Room

Claudia Augusta de Moraes Russo, UFRJ, Rio de Janeiro, RJ

Anotação e enriquecimento funcional

Megeve Room

Aline Silva Mello Cesar, ESALQ/USP, Piracicaba, SP e Bárbara Silva Vignato, FZEA/USP, Pirassununga, SP

14h00 – 17h00

MEETING

23rd Genetics and Molecular Biology, Editorial Board Meeting

Val D'Iserre Room

14h00 – 17h00

MINI COURSES

DNA ambiental (eDNA) metabarcoding e suas aplicações no monitoramento da biodiversidade

Courchevel Room

Daniel Cardoso de Carvalho, PUC Minas, Belo Horizonte, MG; Bruno Henrique Saranholi, UFSCAR, São Carlos, SP;

Izabela Santos Mendes, ITV, Belém, PA e Heron Oliveira Hilário, PUC Minas, Belo Horizonte, MG

Desenvolvimento e genotipagem de microssatélites por sequenciamento de alto rendimento (SSR_GBS): princípios e aplicações

Bariloche Room

Mariana Pires de Campos Telles, PUC Goiás e UFG, Goiânia, GO e Rhewter Nunes, UEG, Iporá, GO

Organoides cerebrais como um modelo neuronal aplicado em neurociência e doenças neurodegenerativas

Chilan Room

Natália Chermont dos Santos Moreira, FMRP/USP, Ribeirão Preto, SP

Ácidos nucleicos na investigação forense

Zermat Room

Silviene Fabiana de Oliveira, UnB, Brasília, DF

Genômica bacteriana aplicada

Megeve Room

Flávia Figueira Aburjaile, UFMG, Belo Horizonte, MG

19h00 – 20h00

CEREMONY

Opening ceremony

Aspen and Vail Room + (Courchevel Room - Simulcast)

Honored: Profa. Maria Paula Cruz Schneider, UFPA, Belém, PA

Homage: Prof. Artur Luiz da Costa da Silva, UFPA, Belém, PA

20h00 – 21h00

OPENING PLENARY SESSION

Genome regulation by non-coding RNAs

Aspen and Vail Room + (Courchevel Room - Simulcast)

Speaker: Piero Carninci, Human Technopole & RIKEN Institute, Milan, Italy

Chair: Glória Regina Franco, UFMG, Belo Horizonte, MG

Wednesday – 21 Aug, 2024

09h00 – 10h00

PLENARY SESSIONS

II Brazilian Symposium on Forensic Genetics – Conference 1

From blood group analysis to the DNA era: The indispensable role of experts. Reflections at the end of a journey

Aspen Room

Speaker: Aguinaldo Luiz Simões, FMRP/USP, Ribeirão Preto, SP

Chair: Silviene Fabiana de Oliveira, UnB, Brasília, DF

Functional characterization and therapeutic targeting of gene regulatory elements

Vail Room

Speaker: Nadav Ahituv, University of California, San Francisco, USA

Chair: Maria Rita Passos-Bueno, IB/USP, São Paulo, SP

On the evolution of circadian clock mechanisms in fungal systems: from organismal interactions to the use of synthetic biology to dissect transcriptional circuits

Courchevel Room

Speaker: Luis F. Larrondo, Pontificia Universidad Católica de Chile, Santiago, Chile

Chair: Alexandre Melo Bailão, UFG, Goiânia, GO

10h00 – 10h30

COFFEE BREAK

10h30 – 12h00 SYMPOSIA and ROUND-TABLE SESSIONS

II Brazilian Symposium on Forensic Genetics – Round-table Discussion 1

From theory to practice: innovative applications of forensic genetics

Aspen Room

Chair: Aguinaldo Luiz Simões, FMRP/USP, Ribeirão Preto, SP

Unraveling genomic diversity for forensic applications: insights from bioinformatics in non-human forensic genetics

Valdir de Queiroz Balbino, UFPE, Recife, PE

Forensic genetics and extension projects: making sexual violence against women visible

Edna Sadayo Miazato Iwamura, UNIFESP/EPM, São Paulo, SP

Forensic genetics in combating crimes against wildlife

Renato Caparroz, UnB, Brasília, DF

Conservation genomics of neotropical endangered vertebrates

Vail Room

Chair: Fabricio Rodrigues dos Santos, UFMG, Belo Horizonte, MG

Conservation genomics of the jaguar: from whole genomes to conservation applications

Eduardo Eizirik, PUC/RS, Porto Alegre, RS

Conservation genomics of the Brazilian merganser: a critically endangered bird of the Neotropics

Fabricio Rodrigues dos Santos, UFMG, Belo Horizonte, MG

Evolution at a small pace: sea turtles and their highly conserved genomes

Camila Mazzoni, Leibniz-Institut für Zoo, Berlin, Germany

Long and short noncoding RNAs and their roles in gene expression

Courchevel Room

Chair: Carla Columbano Oliveira, IQ/USP, São Paulo, SP

Unraveling long noncoding RNAs with oncogenic roles in pancreatic cancer

Eduardo Moraes Rego Reis, IQ/USP, São Paulo, SP

Splicing control of miRNAs in cancer cells

Patricia Pereira Coltri, ICB/USP, São Paulo, SP

The role of Cwc24 in the recruitment and stabilization of U2 snRNP during assembly of the spliceosome

Carla Columbano Oliveira, IQ/USP, São Paulo, SP

Wednesday – 21 Aug, 2024

Plant gene editing

Chilan Room

Chair: Gabriela Gandelini, Bayer Crop Science, São Paulo, SP

Genome editing as a tool to create targeted variation in plants

Marcia Ometto de Mello Alves José, Bayer, Campinas, SP

Applicability of gene editing and its challenges

Marcelo Menossi Teixeira, UNICAMP, Campinas, SP

Gene editing – Brazil and global regulatory policy

Luciana Pimenta Ambrozevícius, CTNBio/MAPA, Viçosa, MG

10h30 – 12h00

AWARDS

YOUNG GENETICIST AWARD: FRANCISCO MAURO SALZANO

Zermat Room

Sponsor: Sociedade Brasileira de Genética

Thematic Area: Genetics

Insights into disease resilience and longevity: hints from COVID-19 recovered nonagenarians and centenarians

Mateus Vidigal de Castro, IB/USP, São Paulo, SP

Genetic variants associated with statin response in a Brazilian cohort of hypercholesterolemic patients

Paula Paccielli Freire, ICB/USP, São Paulo, SP

CSDC2, an RNA-binding protein essential for cardiac differentiation in human induced pluripotent cells

Rubens Gomes Júnior, FIOCRUZ/PR, Curitiba, PR

Downregulation of miR-205 in human keratinocytes exposed to *Leishmania braziliensis* delays re-epithelialization of skin wounds through cell adhesion

Sara Nunes de Oliveira Araújo, FIOCRUZ/BA, Salvador, BA

RHO pathway: a fragile point in the GBM resistance to radiotherapy

Yuli Thamires Magalhães, IQ/USP, São Paulo, SP

ALCIDES CARVALHO AWARD

Megeve Room

Sponsor: IAC – Instituto Agronômico de Campinas

Thematic Area: Plant Genetics and Breeding

Epigenetic modulation of the corn-associated microbiome

Geovanna Vitória Olimpio de Paulo, UENF, Niterói, RJ

Study of drought tolerance in soybeans expressing the MdDHN11 gene from apple (*Malus domestica*)

Juliane Costa Cabral, UnB, Brasília, DF

CRISPR/Cas9-mediated mutation of CsLIEXP1 in *Citrus sinensis* reveals its role as a susceptibility gene for citrus canker disease

Lídia do Nascimento Cavalcante, UNICAMP, Campinas, SP

Solanum lycopersicum SCI1 (SISCI1) affects reproductive meristem maturation, growth of anther cone, and is highly expressed in the seeds

Vanessa Thomé, FMRP/USP, Ribeirão Preto, SP

Characterization of a protein effector from *Moniliophthora perniciosa* and its possible targets of interaction with *Theobroma cacao*

Keilane Silva Farias, UESC, Ilhéus, BA

12h00 – 14h00

LUNCH

Brazilian Genetics Society Executive Board Meeting

Convention Center Restaurant

13h00 – 14h00 TECHNICAL CONFERENCE

SOPHiA DDM platform capabilities and an investigation of the host genome influence on long COVID empowered by SOPHiA whole exome solution **Courchevel Room**

Speaker: Eduardo José Melo dos Santos, Laboratório de Genética de Doenças Complexas, UFPA, Belém, PA

Chair: Gabrielle Martins Gonçalves, SOPHiA GENETICS

Cytogenetic and FISH testing strategies for myeloma and FISH tips and tricks **Bariloche Room**

Palestrantes: Graham Halford e Dave Bohanna - Cytocell

14h00 – 15h00 PLENARY SESSIONS

II Brazilian Symposium on Forensic Genetics - Conference 2

RENIMP: Forensic applications of Latin-American largest DNA fisheries sequence database **Aspen Room**

Speaker: Antonio Mateo Solé-Cava, UFRJ, Rio de Janeiro, RJ

Chair: Rodrigo Soares de Moura Neto, UFRJ, Rio de Janeiro, RJ

SUS Genome project (PANEL) **Vail Room**

Chair: Leandro Machado Colli, USP, Ribeirão Preto, SP

Amazon anchor center

Ândrea Ribeiro-dos-Santos, UFPA, Belém, PA

Northeast anchor center

Norma Lucena Cavalcanti Licinio da Silva, FIOCRUZ, Pernambuco, PE

Southeast anchor center

Michel Satya Naslavsky, IB/USP, São Paulo, SP

Southern anchor south center

Fabio Passeti, FIOCRUZ, Curitiba, PR

Genetic analysis of host heme acquisition in the fungal pathogen *Candida albicans* **Courchevel Room**

Speaker: Daniel Kornitzer, Faculty of Medicine, Technion – I.I.T., Haifa, Israel

Chair: Alexandre Melo Bailão, UFG, Goiânia, GO

Defensomes and counter-defensomes in complex microbial communities **Chilan Room**

Speaker: Pedro H. Oliveira, Lab Head, Atomic Energy and Alternative Energies Commission, University of Paris-Saclay, France

Chair: Maria Paula Cruz Schneider, UFPA, Belém, PA

15h00 – 15h30 COFFEE BREAK

15h30 – 17h00 SYMPOSIA and ROUND-TABLES

II Brazilian Symposium on Forensic Genetics – Round-table Discussion 2

Frontiers in forensic genetics: integrating artificial intelligence, bioinformatics, and statistical models **Aspen Room**

Chair: Cintia Fridman Rave, FM/USP, São Paulo, SP

Assessment of brotherhood and half-brotherhood bonds based on likelihood ratio

Viviane Carlin Cordaro, IC-STC/SP, São Paulo, SP

Exploring the potential of artificial intelligence in forensic analysis: a comparison between machine learning techniques and traditional statistical methods

Sérgio de Sá Leitão Paiva Junior, UFRPE, Recife, PE

Populational study of autosomal STR genetic markers by massively parallel sequencing (MPS) in a sample from the state of Rio de Janeiro, Brazil

Carolina Bottino Gruszkowski Fratani, IPPGF - SEPOL, Rio de Janeiro, RJ

Complex diseases and genomic instability

Chair: Ândrea Ribeiro-dos-Santos, UFPA, Belém, PA

Mitogenome instability in Parkinson's disease

Gilderlano Santana de Araújo, UFPA, Belém, PA

Sequencing of the mitogenome reveals the possible influence of heteroplasmic variants in leprosy

Pablo Diego do Carmo Pinto, UFPA, Belém, PA

Invisible connections: exploring the relationship of intestinal microbiota with sleep patterns and psychiatric disorders during adolescence

Luciana Tovo Rodrigues, UFPL, Pelotas, RS

Origin and evolution of viruses: a 4 billion year history

Chair: Sávio Torres de Farias, UFPB, João Pessoa, PB

At the limits of the virosphere: origin and evolution of the largest viruses ever described on the planet

Jônatas Santos Abrahão, UFMG, Belo Horizonte, MG

From progenotes to the virosphere: unraveling the evolutionary saga of viruses

Francisco Prosdocimi de Castro Santos, UFRJ, Rio de Janeiro, RJ

Viruses and the establishment of DNA genomes

Sávio Torres de Farias, UFPB, João Pessoa, PB

Cutting-Edge methods in transcriptome studies

Chair: Cristiane Paula Gomes Calixto, USP, São Paulo, SP

Measuring variable gene transcript abundances in barley

Craig G. Simpson, The James Hutton Institute, Dundee, UK

Providing transcript level analysis using sequencing data by novel computational methods and tools

Runxuan Zhang, The James Hutton Institute, Dundee, UK

Unlocking the discovery potential of RNA-Seq data: novel candidate genes involved in rice thermotolerance

Cristiane Paula Gomes Calixto, USP, São Paulo, SP

Vail Room

Courchevel Room

Chilan Room

15h30 – 17h00

AWARDS

NEWTON FREIRE MAIA AWARD

Sponsor: Dra. Eleidi Alice Chautard Freire Maia

Thematic Area: Human and Medical Genetics, Pharmacogenetics

Effects of ADIPOQ SNPs on adiponectin levels in hypertensive disorders of pregnancy

Ricardo Nodari Fróes de Castro, UFMG, Belo Horizonte, MG

Establishment and characterization of an *in vitro* model to select SN38-resistant human colon cancer subpopulations derived from parental HCT116 cell line to evaluate anticancer drugs

Fernanda Aparecida dos Santos France, UNESP/Botucatu, SP

Association of HLA haplotypes and fecal microbiota in individuals with celiac disease

Fernanda Vítório da Silva, UFPR, Curitiba, PR

Variant classification in breast and ovarian cancer patients from Minas Gerais: unraveling uncertain clinical significance

Thalia Queiroz Ladeira, UFMG, Belo Horizonte, MG

Genetic variation in HLA genes: impact on transplant compatibility in two admixed Brazilian cohorts

Heloísa de Souza Andrade, IB/USP, São Paulo, SP

HORÁCIO SCHNEIDER AWARD

Sponsor: Dra. Maria Iracilda da Cunha Sampaio

Thematic Area: Animal Genetics and Animal Breeding including Symposium on Cytogenetics and Fish Genetics

Inhibition of the transcription factor dorsal alters aggressive behavior in eusocial bees

Leonardo Campana, FMRP/USP, Ribeirão Preto, SP

Effects of mariner-Mos1 transposase overexpression on the behavior and survival of *Drosophila melanogaster*

Mariana Cancian, UFRGS, Porto Alegre, RS

Juvenile hormone signal transduction is necessary for oocyte maturation in different life stages of *Blattella germanica* and *Apis mellifera*, holometabolous and hemimetabolous insect models

Thiago da Silva Depintor, FMRP/USP, Ribeirão Preto, SP

Correlations in feeding morphologies reveal convergence in Neotropical adaptive radiation of cichlids

Luiza Silva Anselmini, UFRJ, Rio de Janeiro, RJ

Genomic insights on the sex chromosome evolution of *Harttia* (Siluriformes, Loricariidae)

Francisco de Menezes Cavalcante Sassi, UFSCar, São Carlos, SP

Megeve Room

Zermat Room

Wednesday – 21 Aug, 2024

17h00 – 19h00

POSTER SESSION

Abstracts with **ODD numbers** should be hung on the respective posterboard on **Aug. 21st**, Wednesday, as of 10:00 am and should be removed by 10:00 am on **Aug. 22nd**, Thursday.

Resumos com números **ÍMPARES** devem ser afixados no dia **21/08/24**, quarta-feira, a partir das 10 h, sendo removidos até as 10 h de **22/08/24**, quinta-feira.

19h30 – 21h15

ROUND-TABLE & DEBATE

Publish, try but not to perish - The problem and possible solutions

Aspen Room

(in Portuguese)

Participants: Alicia J. Kowaltowski, IQ/USP, São Paulo, SP
Abel Laerte Packer, Director of the SciELO Program, FAPESP, São Paulo, SP
Nícolas Carlos Hoch, IQ/USP, São Paulo, SP
Andréa Carvalho Vieira, CAPES, Portal de Periódicos Capes, Brasília, DF (general coordinator)

20h15 – 20h45 Discussion Panel & Debaters

Marcia M. A. N. Pinheiro Margis, UFRGS, Porto Alegre, RS
Carlos Frederico Martins Menck, ICB/USP, São Paulo, SP
Samuel Goldenberg, Fiocruz, Curitiba, PR
Fabricio Rodrigues dos Santos, UFMG, Belo Horizonte, MG

21h00 Final considerations and results

19h30 – 22h30

GET TOGETHER DINNER

Students should be at 7:15 pm at the restaurant

Convention Center Restaurant
(ground floor)

Thursday – 22 Aug, 2024

09h00 – 18h00

GENÉTICA NA PRAÇA

Outdoor Genetics Activities

The Giant Cell (Célula Gigante)

Praça do Capivari

(Djalma Forjaz Street)

09h00 – 10h00

PLENARY SESSIONS

Underlying molecular mechanisms of vascular aging and the effect of dietary restriction

Aspen Room

Speaker: Ingrid van der Pluijm, Erasmus University Rotterdam, Netherlands

Chair: Carlos Frederico Martins Menck, ICB/USP, São Paulo, SP

Genome size variation and gene expression in *Lippia alba*, a remarkable medicinal species

Vail Room

Speaker: Lyderson Facio Viccini, UFJF, Juiz de Fora, MG

Chair: Ana Maria Benko Iseppon, UFPE, Recife, PE

10h00 – 10h30

COFFEE BREAK

10h30 – 12h00

SYMPOSIA AND ROUND-TABLES

Stingless bees genomics

Aspen Room

Chair: Thiago Mafra Batista, UFSB, Porto Seguro, BA

Decoding cleptoparasitism: molecular insights from the bees *Coelioxoides waltheriae* and their host *Tetrapedia diversipes*

Maria Cristina Arias, ICB/USP, São Paulo, SP

Genomics approaches to the analysis of life history variation in Neotropical stingless bees (Meliponini)

Klaus Hartmann Hartfelder, FMRP/USP, Ribeirão Preto, SP

Sequencing the complete genome of jataí (*Tetragonica angustula*): challenges and findings

Thiago Mafra Batista, UFSB, Porto Seguro, BA

The role of genomic variants in ecology and evolution

Vail Room

Chair: Clarisse Palma da Silva, UNICAMP, Campinas, SP

The role of structural variants in ecological genomics and conservation

Clarisse Palma da Silva, UNICAMP, Campinas, SP

Structural variation and adaptive radiation

Ovidiu Paun, University of Vienna, Vienna, Austria

Speciation and adaptation to aridity: a case of study in wild tobaccos (*Nicotiana sect. Suaveolentes*)

Luiz Augusto Cauz dos Santos, University of Vienna, Austria

The diversity of RNAs

Courchevel Room

Chair: Glória Regina Franco, UFMG, Belo Horizonte, MG

Regulatory lncRNAs in metastatic castration-resistant prostate cancer

Rodrigo Juliani Siqueira Dalmolin, UFRN, Natal, RN

Regulatory roles of snoRNAs and snRNA variants in ribosome and spliceosome heterogeneity: implications for cell differentiation and cancer

Roberto Andrés Munita Robert, Universidad del Chile, Santiago, Chile

Deciphering the role of lncRNAs in cellular function and development through single-cell sequencing

Vinicius Maracaja-Coutinho, ACCDiS, Universidad de Chile, Santiago, Chile

DNA damage responses and genome instability

Chilan Room

Chair: Lucymara Fassarella Agnez-Lima, UFRN, Natal, RN

Shared pathways between Type 2 Diabetes and Alzheimer's Disease –

Oxidative and neurotoxic damages studied in neuronal models

Elza Tiemi Sakamoto Hojo, FFCLRP/USP, Ribeirão Preto, SP

DNA damage responses in *Trypanosoma cruzi*

Carlos Renato Machado, UFMG, Belo Horizonte, MG

Involvement of NER and BER in cellular responses to oxidative stress

Lucymara Fassarella Agnez-Lima, UFRN, Natal, RN

10h30 – 12h00

AWARDS

CRODOWALDO PAVAN AWARD

Zermat Room

Sponsor: MutaGen – Associação Brasileira de Mutagenese e Genômica Ambiental

Thematic Area: Mutagenesis, Cyto, and Genotoxicity

Exploring endogenous damage in cockayne syndrome: insights from 2d and 3d cell culture models

Gabrielly Cristine Martins, UNIFESP, São Paulo, SP

Expression profile of genes involved in cell migration in BT-20 breast cancer cell line exposed to treatment with curcumin and the curcumin analogue NC2603

Beatriz Borsani Sampaio, UNAERP, Ribeirão Preto, SP

Co-occurrence landscape of Single Nucleotide Variants (SNVs) of different evolutionary origins and their functional consequences in the human genome

Thais Silva Tavares, UFMB, Belo Horizonte, MG

NRF2 activation as a potential strategy to enhance neuronal survival under the exposure to oxidative stress

Renata Melo dos Santos Ono, USP, Ribeirão Preto, SP

Study of the role of TP53 in the regulation of the antiproliferative effects of cis-trimethoxystilbene in the breast tumoral cell line MCF-7

Julia Mirian Paulino, UNIFRAN, Franca, SP

MILTON KRIEGER AWARD

Megeve Room

Sponsor: Dr. Henrique Krieger

Thematic Area: Microorganism Genetics

Redesigning the sugar transport system in an industrial *Saccharomyces cerevisiae* for simultaneous xylose/glucose fermentation

João Gabriel Ribeiro Bueno, UNICAMP, Campinas, SP

Differential codon usage and alternative splicing coordinate translation optimization during the fungal integrated stress response

João Neves da Rocha Fonseca, FMRP/USP, Ribeirão Preto, SP

Genomics and evolutionary analyses reveal new species of giant algal viruses

João Victor Rodrigues Pessoa Carvalho, UFMG, Belo Horizonte, MG

The involvement of VC0489, a bifunctional acyltransferase (OlsF) of *Vibrio cholerae* N16961, in the physiology and pathogenicity of the bacterium

Marcela Mello Avellar, UFRJ, Rio de Janeiro, RJ

Monitoring the microbiota in the waters of the Pantanal, as a marker for the impact of anthropological stress

Ana Regina Oliva Parelho, UCB, Brasília, DF

12h00 – 14h00

FORUM

Former SBG Presidents Forum

Convention Center Restaurant (ground floor)

13h00 – 14h00

TECHNICAL CONFERENCE

Research in the post-genomic era:

Courchevel Room

how a support laboratory can help

Speaker: Iuri Matteuzzo Ventura, Gencell Lab Specialist

Chair: Claudia Oliveira, Gencell Lab

Reliable results from FFPE samples using Beckman Coulter kits

Bariloche Room

Speaker: Maira de Souza Nunes Martins, Sinapse Biotecnologia

Chair: André Herklotz, Sinapse Biotecnologia

14h00 – 15h30 SYMPOSIA and ROUND-TABLES

DNA repair mechanisms: from procariots to yeast to humans (in Portuguese) **Aspen Room**

Chair: Nicolas Carlos Hoch, IQ/USP, São Paulo, SP

Mechanisms of repair and mutagenesis of UV light-induced lesions in bacteria: the old and the new

Rodrigo da Silva Galhardo, ICB/USP, São Paulo, SP

Exploring the role of inositol polyphosphates in cellular homeostasis and DNA damage response

José Renato Rosa Cussiol, UNIFESP, São Paulo, SP

A novel ARH3 (ADPRHL2) mutation in a Brazilian patient with CONDSIAS

Nicolas Carlos Hoch, IQ/USP, São Paulo, SP

The evolution of regeneration in metazoans

Chair: Rodrigo Nunes da Fonseca, UFRJ, Rio de Janeiro, RJ

Are sponges the top models to investigate regeneration in metazoa?

Emilio Lanna, UFBA, Salvador, BA

Evolution and development of snakelike phenotypes in amphibians and reptiles

Tiana Kohlsdorf, FFCLRP/USP, Ribeirão Preto, SP

The role of pioneer transcription factors in arthropod development and regeneration

Rodrigo Nunes da Fonseca, UFRJ, Rio de Janeiro, RJ

Molecular mechanisms of the microorganism physiology

Chair: Alexandre Melo Bailão, UFG, Goiânia, GO

Molecular archeology: uncovering RNA relics in bacteria

Lucas Weba Soares, Yale University, New Haven, USA

Living with macrophages: Histoplasma intracellular metabolism

Mirelle Garcia Silva Bailão, UFG, Goiânia, GO

Phenotypic plasticity of *Fonsecaea* sp. isolates

Larissa Fernandes Matos, UnB, Brasília, DF

Genomics applied to the conservation of endangered birds

Chair: Cristina Yumi Miyaki, IB/USP, São Paulo, SP

Flying genomes: using genomic data as tools for conservation of Brazilian bird species

Sibelle Torres Vilaça, ITV, Belém, PA

What should we conserve: species complexes, species or population structure?

***Formicivora* antbirds as exemplars**

Fabio Sarubbi Raposo do Amaral, UNIFESP, Diadema, SP

Genomic data for the conservation of the hyacinth macaw (*Anodorhynchus hyacinthinus*)

Cristina Yumi Miyaki, IB/USP, São Paulo, SP

Vail Room

Courchevel Room

Bariloche Room

14h00 – 15h30 AWARDS

PAULO SODERO MARTINS AWARD

Sponsor: Dr. Romeu Cardoso Guimarães

Thematic Area: Evolutionary Genetics

Genomic evidence of introgression and admixture in a *Drosophila* contact zone in Southern Brazil

Naomi Yukie Eto, FMRP/USP, Ribeirão Preto, SP

Influence of host fruits on morphological and epigenetic variation in *Anastrepha fraterculus* fruit flies (Diptera: Tephritidae)

Beatriz Faustino Lima Mendonça, UFSCar, São Carlos, SP

Bonded for life: evolutionary insights into meiofauna adhesive traits

Thainá Cortez Silva, IB/USP, São Paulo, SP

Analysis of gene duplications of the digestive enzymes trypsin and chymotrypsin in Lepidoptera

Patricia Rasteiro Ordiale Oliveira, UFG, Goiânia, GO

Molecular basis in controlling the pigmentation pattern of the wings of male *Drosophila suzukii*

Mariana Silva de Lima Areal, UFRJ, Rio de Janeiro, RJ

***Cladocroce caelum* (Porifera) has a specialized growth region and a transcriptional regionalization across body axis**

Bruno Cajado Almeida Gouveia, UFBA, Salvador, BA

Zermat Room

DARCY FONTOURA DE ALMEIDA AWARD

Megeve Room

Sponsor: Dra. Suely Spiguel

Thematic Area: Bioinformatics Applied to Omics

Severe motor phenotype and molecular alterations in mitochondrial complexes in patients with Parkinson's disease

Matheus Caetano Epifane de Assunção, UFPA, Belém, PA

Investigating the genomics of eusociality and parasitoidism in Hymenoptera

Maycon Douglas de Oliveira, UFMG, Belo Horizonte, MG

Prognostic relevance of ZNF429 gene expression in high-grade serous ovarian cancer

Glenerson Baptista, INCA, Rio de Janeiro, RJ

Prospection, structural, and functional characterization of novel fungal amylases of industrial interest using bioinformatic tools

Gabriel Albuquerque Xavier, UFPA, Belém, PA

Single-cell chromatin and transcriptome sequencing of the human cortex reveals neuronal vulnerability and activated glial cell states in focal cortical dysplasia

Isabella Cotta Galvão, UNICAMP, Campinas, SP

Deciphering potentially conserved long non-coding RNAs as tumor stemness modulators in pancreatic ductal adenocarcinoma

Daniela Bizinelli, IQ/USP, São Paulo, SP

14h00 – 18h00 GENÉTICA NA PRAÇA - OFICINAS

Outdoor Genetics Activities 2024 Schedule

Praça do Capivari

Science Activities and Workshops, in Portuguese

(Djalma Forjaz Street)

1. Cinema e evolução: o minuto Lumière

Luís Gustavo da Conceição Galego – Universidade Federal do Triângulo Mineiro

Oficina de produção de um curta-metragem de um minuto sem cortes e sonorização, a partir de materiais de papelaria e celulares que possibilitem filmagens, de diferentes conceitos sobre evolução biológica.

2. Enigmas do câncer

Gabriel Fonseca – INCA

Jogo de tabuleiro que busca a conscientização sobre a importância da prevenção do câncer e os desafios no combate à progressão da doença.

3. RNA na praça

Glenerson Baptista – INCA

A mecânica do jogo gira em torno de um baralho de cartas que proporciona uma experiência educativa única e estratégica, focada na criação de sequências de RNA saudáveis em meio a desafios genéticos, como o câncer.

4. A dinâmica das populações

Ana Carolina Simões Ramos, Juliana Teixeira Dutra, Rafaela Sotero – Fundação INOVA

Utilização de um modelo gênico com bolinhas coloridas distribuídas em diferentes cenários populacionais para trabalhar frequências gênicas e genotípicas endogamia, equilíbrio de Hardy-Weinberg e alguns fatores evolutivos como: seleção direcional, estabilizadora e disruptiva, migração e deriva genética.

5. Cartas raras: um desafio de estratégias de comunicação em saúde e ética

Boscolli Barbosa Pereira, Fernanda Fernandes dos Santos Rodrigues e Carlos Fernando Campos – Universidade Federal de Uberlândia

A atividade para compartilhar conhecimentos sobre doenças genéticas raras, destacar e refletir sobre as questões éticas envolvidas e a importância da humanização nas práticas de aconselhamento genético.

6. Bioalarmes em ação - o papel dos biomarcadores e a vigilância em saúde

Boscolli Barbosa Pereira, Fernanda Fernandes dos Santos Rodrigues e Carlos Fernando Campos – Universidade Federal de Uberlândia

Atividade que envolve pesquisa, interação e reflexão sobre o desenvolvimento e aplicação dos biomarcadores como ferramenta de monitoramento contínuo da saúde humana. A atividade, organizada em diferentes fases, permite a definição de problemas de pesquisa, a elaboração de hipóteses e modelos investigativos.

7. Geração de variabilidade: uma analogia com livros e bibliotecas

Ana Lúcia Giannini, Luiz Felipe Rezende de Magalhães, Caroline Trevelin e Adlane Vilas-Boas Ferreira – UFRJ e Universidade Federal de Minas Gerais

A atividade usa situações que envolvem a criação de bibliotecas de livros de diferentes gêneros organizados em estantes específicas para o ensino de vários aspectos da Genética, em especial a geração de variabilidade.

8. Paleoparasitologia para quê?

Alena Mayo Iñiguez e equipe do Lab de Parasitologia Integrativa e Paleoparasitologia - IOC-FIOCRUZ

A atividade expõe ilhas demonstrativas sobre o manejo do material arqueológico, a análise por microscopia de parasitos, as técnicas de biologia molecular para o estudo de DNA antigo e análise de dados paleogenéticos e paleogenômicos de paleoparasitas.

9. Escape room de genética forense

Silviene Fabiana de Oliveira; Valéria Miranda Amorim e Luciana Martins de Medeiros Pain - UnB

Nessa dinâmica, os alunos são desafiados a resolver quebra-cabeças, decifrar códigos e encontrar pistas relacionadas à genética forense, dentro de um ambiente temático.

10. Aventura molecular

Victor Alexandre Félix Bastos, Aline Gomes de Souza – IBTEC- UFU

Utilizando um jogo de tabuleiro moderno com mecânicas de manejo de recursos, alocação de unidades e resolução de objetivos, a atividade aborda processos biológicos complexos como a replicação do DNA, a transcrição e a tradução de uma maneira divertida e instigante para os alunos.

11. Traduzindo a tradução

Aline Gomes de Souza, Victor Alexandre Félix Bastos, Marcelo Dias Baruffi - IBTEC-UFU

A atividade usa um autorama modificado para demonstrar o processo de tradução do mRNA e a síntese de proteínas. Trilhos coloridos formam uma pista para os carros de brinquedo e representam a sequência de nucleotídeos; cada códon possui seu respectivo aminoácido; um ribossomo percorre os trilhos lendo os códons enquanto tRNA's trazem os aminoácidos correspondentes, permitindo a síntese proteica.

12. Evolução em harmonia: uma jornada musical pela genética e evolução

Direção geral: Prof Francisco Prosdocimi (voz e violão) (ator: Ernst Mayr)

Direção musical: Maestro Erivaldo Fraga (baixo) e Prof Julio Mignaco (bateria)

Direção cênica: Wanessa Machado (Backing vocal) e Profa Ana Maria Landeira (Backing vocal)

Instrumentistas: Erivaldo Fraga (baixo), Luísa Taranto (percussão) (atriz: Carl Correns), Isaac Newton e Elyanderson Cândido (violinistas convidados), Erivaldo Fraga (baixo), Julio Mignaco (bateria e voz) (ator: Thomas Morgan), Wanessa Machado (backing vocal, performance de dança) (atriz: Gregor Mendel, Hugo De Vries), Ana Maria Landeira (backing vocal, mestre de cerimônias) (atriz: Charles Darwin), Alessandra Maris Ruiz da Costa (backing vocal, mestre de cerimônias, cinegrafista) (atriz: William Bateson)

Em um espetáculo que combina música e teatro, os espectadores são transportados para uma jornada pela história dos estudos em genética e evolução.

15h30 – 16h00

COFFEE BREAK

16h00 – 17h30

ASSEMBLY

SBG GENERAL ASSEMBLY

Aspen Room

17h30 – 19h30

POSTER SESSION

Abstracts with **EVEN numbers** should be hung on the respective posterboard on **Aug. 22nd**, Thursday, as of 10:00 am and should be removed by 10:00 am on **Aug. 23rd**, Friday.

Resumos com números **PARES** devem ser afixados no dia **22/08/24**, quinta-feira, a partir das 10 h, sendo removidos até as 10 h de **23/08/24**, sexta-feira.

Friday – 23 Aug, 2024

09h00 – 10h00

PLENARY SESSIONS

The fungal zinc-scavenger is a molecular determinant of immune evasion, immunopathology & ecology

Aspen Room

Speaker: Duncan Wilson, University of Exeter, Exeter, UK

Chair: Clayton Luiz Borges, UFG, Goiania, GO

Unraveling the complex plant-multitrophic interactions in nature

Vail Room

Speaker: Marcio de Castro Silva Filho, ESALQ/USP, Piracicaba, SP

Chair: Ana Maria Benko Iseppon, UFPE, Recife, PE

09h00 – 10h00

FORUM

Post-Graduation Forum - Fórum da Pós-Graduação (in Portuguese)

Courchevel Room

Área "Ciências Biológicas I", CAPES

Coordinator: Célia Maria de Almeida Soares, UFG, Goiânia, GO

Valdir de Queiroz Balbino, UFPE, Recife, PE

10h00 – 10h30

COFFEE BREAK

10h30 – 12h00

SYMPOSIA and ROUND-TABLES

Harnessing microbial genomics for biotech innovations

Aspen Room

Chair: Maria Eugenia Guazzaroni, FFCLRP/USP, Ribeirão Preto, SP

A metagenomics approach to characterize bacterial biotechnological metabolic leads

Ricardo Roberto da Silva, FCF/USP, São Paulo, SP

Unveiling the hidden microbial world: integrating shotgun metagenomics, amplicon sequencing, and advanced bioinformatics for comprehensive soil microbial analysis

Rafael Silva Rocha, FMRP/USP, Ribeirão Preto, SP

Driving sustainable biotechnology: molecular strategies for environmental bacterial engineering

Maria Eugenia Guazzaroni, FFCLRP/USP, Ribeirão Preto, SP

Cell signaling in the environmental stress-plant interactions

Vail Room

Chair: Elizabeth Pacheco Batista Fontes, UFV, Viçosa, MG

G-signaling under stress conditions: the phospho-barcode of plant RGS1

Pedro Augusto Braga dos Reis, UFV, Viçosa, MG

Beyond antioxidant defenses: peroxidases involved in plant development and stress responses signaling

Marcia M. A. N. Pinheiro Margis, UFRGS, Porto Alegre, RS

Cross-communication between plant immunity and growth control under abiotic and biotic stresses

Elizabeth Pacheco Batista Fontes, UFV, Viçosa, MG

Genomes gone wild: the complexity of the evolutionary histories of non-model organisms

Courchevel Room

Chair: Sandro Luis Bonatto, PUCRS, Porto Alegre, RS

Population size changes and genomic diversity patterns across Amazon over the late quaternary

Alexandre Aleixo, ITV, Belém, PA

How does hybridization impact species delimitation? Insights from the *Petunia* long corolla tube clade

Loreta Brandão de Freitas, UFRGS, Porto Alegre, RS

The complex evolution of marine mammals and sea turtles as told by whole genome data

Sandro L Bonatto, PUCRS, Porto Alegre, RS

Biomarkers of genotoxicity in fish: how anthropogenic activities impact the Pantanal, Cerrado and Amazon biomes

Bariloche Room

Chair: Bruno do Amaral Crispim, UFGD, Dourados, MS

Relationship between the conversion of the Pantanal into agricultural and livestock areas impacts on the genotoxicity of fish

Alexeia Barufatti, UFGD, Dourados, MS

Impacts of the agricultural areas in the Cerrado, what the influences of this in genotoxic bioassays in headwaters areas?

Bruno do Amaral Crispim, UFGD, Dourados, MS

Relationship between mining activities, Araguari river waters contamination by metals and genotoxicity biomarkers in fish

Fábio Kummrow, UNIFESP, Diadema, SP

12h00 – 13h00

CEREMONY

Awards and closing ceremony of the GENETICA 2024 – 69° CBG

Aspen and Vail Room

STABLE AND COST-EFFECTIVE PRODUCTION OF GCASE-OPT USING A LOW MOI LENTIVIRAL APPROACH FOR ENZYME REPLACEMENT THERAPY IN GAUCHER DISEASE: DEVELOPMENT OF L20_HEF1A_GBA-OPT-R534H, A STABLE HUMAN CELL LINE

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Abstract:

Gaucher Disease (GD) is an autosomal recessive, lysosomal storage disease characterized by deficient b-glucocerebrosidase (GCase) enzymatic activity. Enzyme replacement therapy (ERT) with recombinant GCase is the standard of care in GD patients, but production and activity optimization of recombinant enzymes remains a challenge. To overcome these limitations, we developed a novel approach using low MOI and fewer transduction cycles to generate a human cell line, L20_HeF1a_GBA-OptR534H, and characterized the resulting mixed population. Methods: Using synthetic biology, recombinant DNA techniques, and a lentiviral platform, we engineered a human cell line with stable production of synthetic GCase enzyme variant incorporating the R534H mutation, similar to the Genzyme patent US 5,549,892A. After that, we performed fluorescence intensity measurements of enzyme activity in both the cell lysate (specific activity) and cell supernatant (secreted enzyme) using synthetic fluorescent substrate 4-Methylumbelliferyl-beta-D-glucopyranoside (4-MU-β-glc) in the presence of sodium taurocholate to characterize this cell line. We measured specific activity using 30 μL of cell lysates (40 - 60 μg total protein) without dilution and then at 20-fold and 25-fold dilutions, in order to obtain the fluorescence intensity within the linear range of the standard curve. Levels of the secreted enzyme in the supernatant were measured without dilution and with 10-fold dilution. Cell productivity was then calculated considering both secreted enzyme and specific activity. Results: In this study, the L20_HeF1a_GBA-OptR534H cell line exhibited stable GCase production. We observed that secreted enzyme levels were the highest after a 10-fold dilution ($23.02 \pm 7,310$ nmols/mL/h) compared to no dilution ($7.25 \pm 4,276$ nmols/mL/h). We also noticed that a 10-fold dilution brought the concentration of the secreted enzyme within the linear range of the standard curve, ensuring accurate measurement. Specific activity was also influenced by dilution. The highest average activity was observed with a 20-fold dilution ($324.12 \pm 57,567$ nmols/mg/h), while a 25-fold dilution resulted in a lower average activity ($280.53 \pm 77,552$ nmols/mg/h). In this case, focusing on the dilution with the smallest difference between cultures (C1, C2, C3, and C4) 20-fold dilution was a better approach to assess enzyme production. The highest overall productivity (209,138.13 nmols/million cells/hour) was achieved using a 10-fold dilution for secreted enzyme and a 20-fold dilution for specific activity. Conclusion: Herein, we successfully generated a human cell line, L20_HeF1a_GBA-OptR534H, with stable GCase-OPT production using a low MOI of 15 and only 3 cycles of transduction. Although individual cultures exhibited variability, L20_HeF1a_GBA-OptR534H demonstrated the potential for significantly higher enzyme production compared to leukocytes ($17,31 \pm 7,56$ of degraded substrate/ mg/h). The importance of optimizing sample dilution for accurate fluorescence intensity measurements was also highlighted. The next step is to perform cell cloning of L20_HeF1a_GBA-OptR534H to establish a homogeneous cell line with the most consistent and highest GCase production levels. This approach, with fewer cycles of transduction, shows potential for saving time and reducing costs compared to previous methods.

Palavras-chave: Gaucher Disease; Codon optimization; Recombinant GCase; lentiviral platform; enzyme activity measurements.

Support / Acknowledgment

This work was supported by Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) and Agilent Technologies (Project no 2013/50450-2), FAPESP-MIT (Project no 2013/50764-7), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).