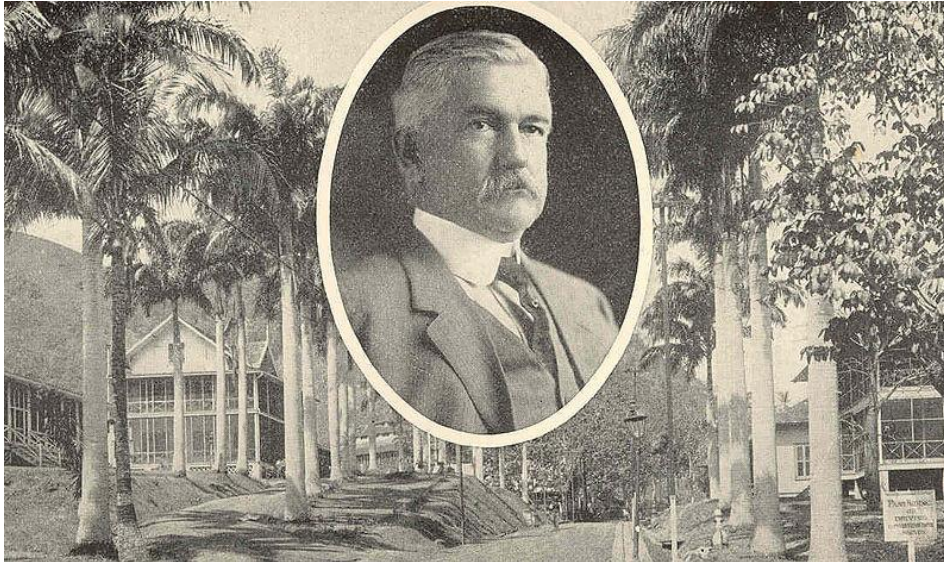




Science in Panama





About Me



Short Bio:

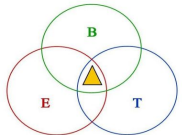
BSc. Computer Systems Engineering, UTP
MSc, Computer Science (Bioinformatics), McGill
PhD, Experimental Medicine, McGill

I am a bio/chemo-infomatician with interest in innovative approaches for bridging computational and data analysis approaches for biology, chemistry, medicine, **agriculture** and **climate research**.

I am a researcher at the Centro de Producción e Investigaciones Agroindustriales (CEPIA)-UTP. Grupo de Investigaciones en Biotecnología, Bioinformática y Biología Sintética (GIBBS). Professor at Facultad de Ingeniería de Sistemas Computacionales (FISC). Adjunct Reseracher at INDICASAT-AIP.

Research interest:

- Machine learning and multivariate analysis applied to spectral signals (Mass Spectrometry, Near-infrared Spectroscopy). Also images, sounds.
- Applied High Performance Computing



"VITA SICUT SCIENTIAM ET PROPOSITUM"



INDICASAT AIP
INSTITUTO DE INVESTIGACIONES CIENTÍFICAS
Y SERVICIOS DE ALTA TECNOLOGÍA

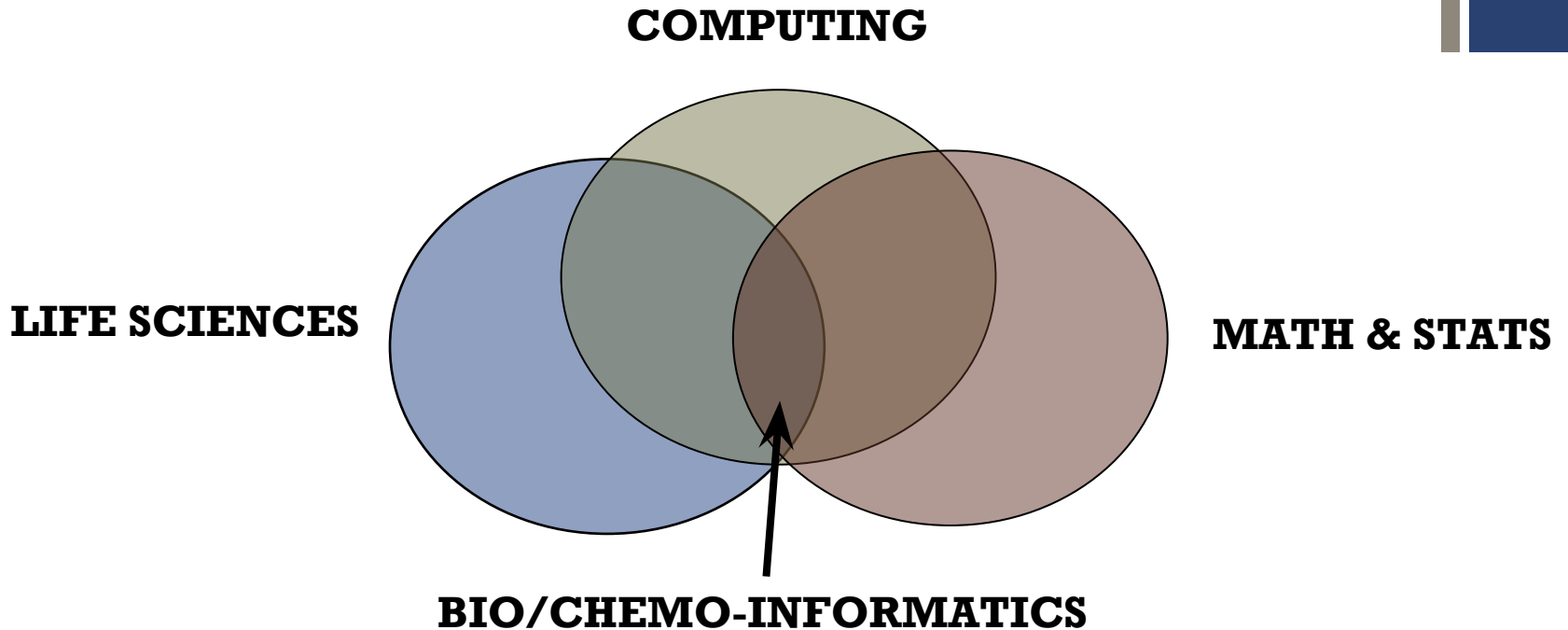


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Molecular Bio & Medicine



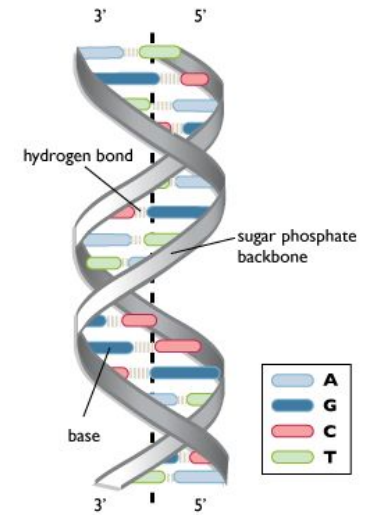
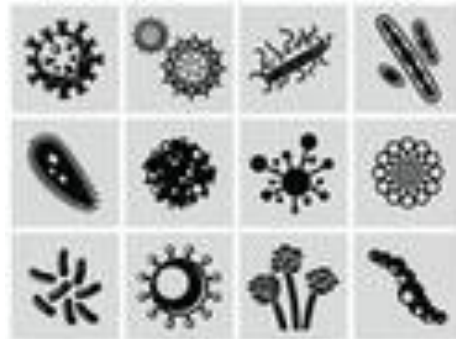
Bioinformatics?



Bioinformatics: study of the computational methods needed for the generation, management, storage and analysis of biological data.

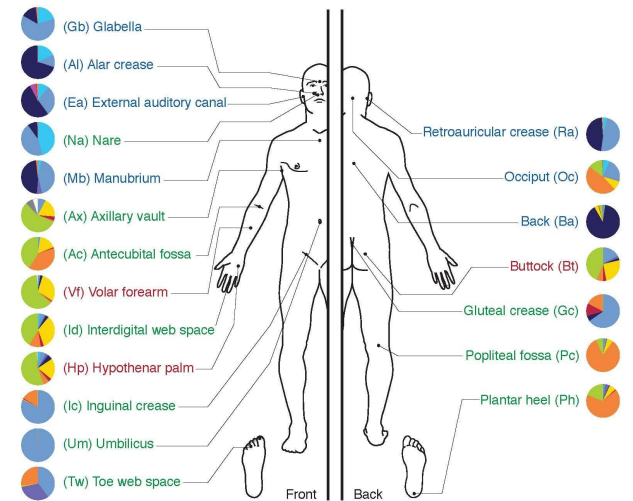
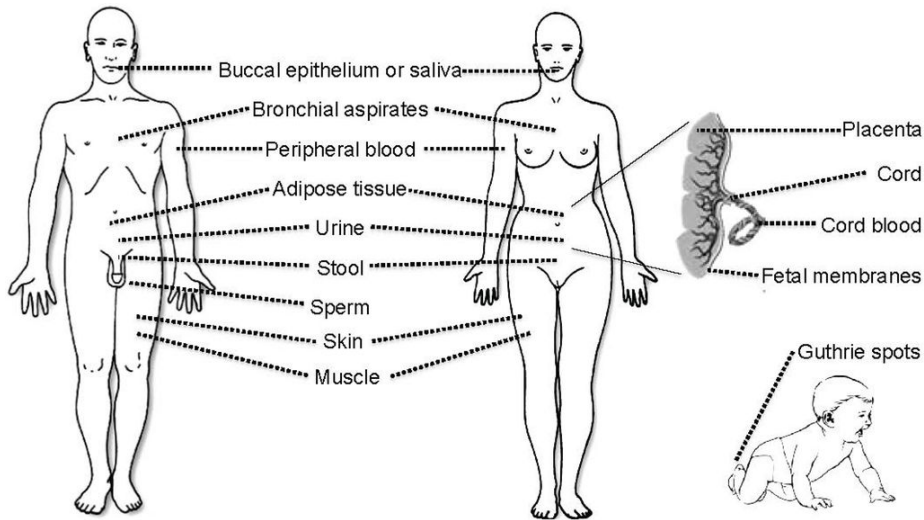
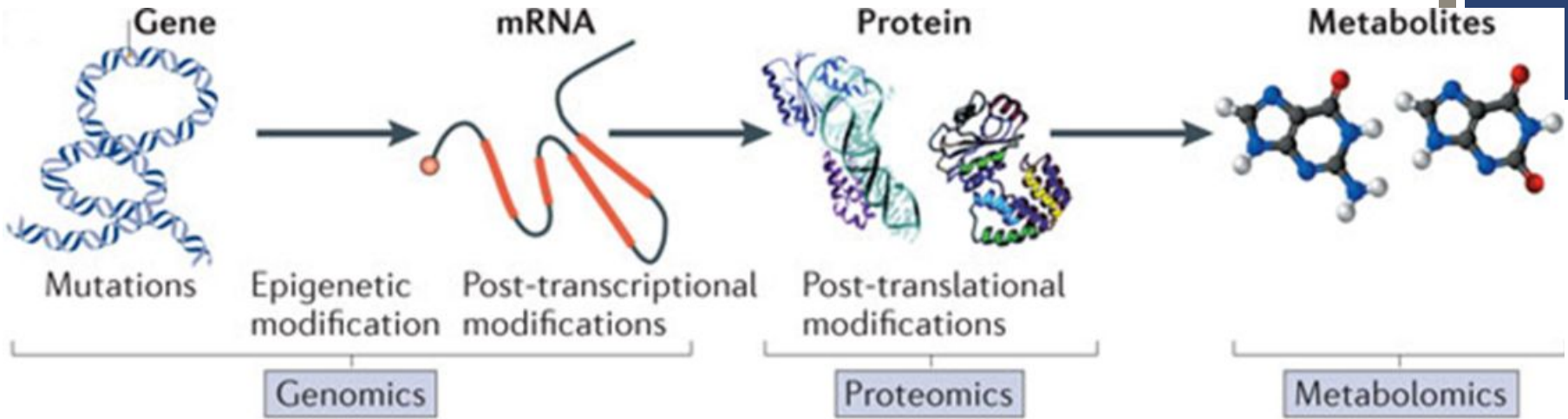
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Range of Action of Bioinformatics



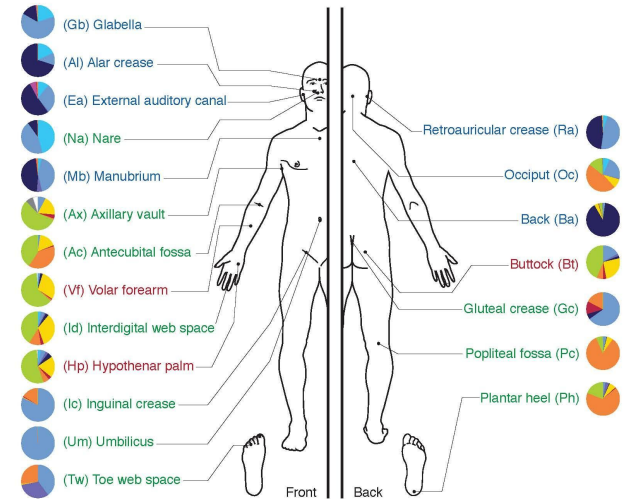
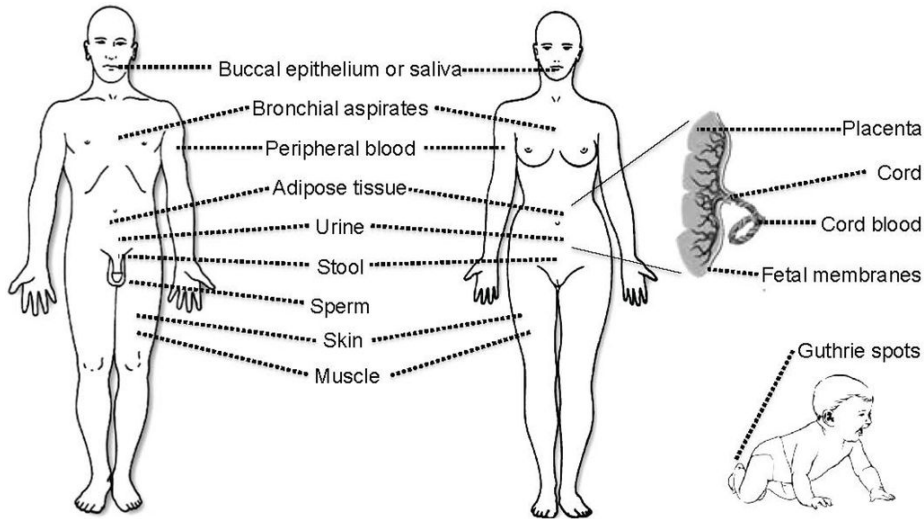
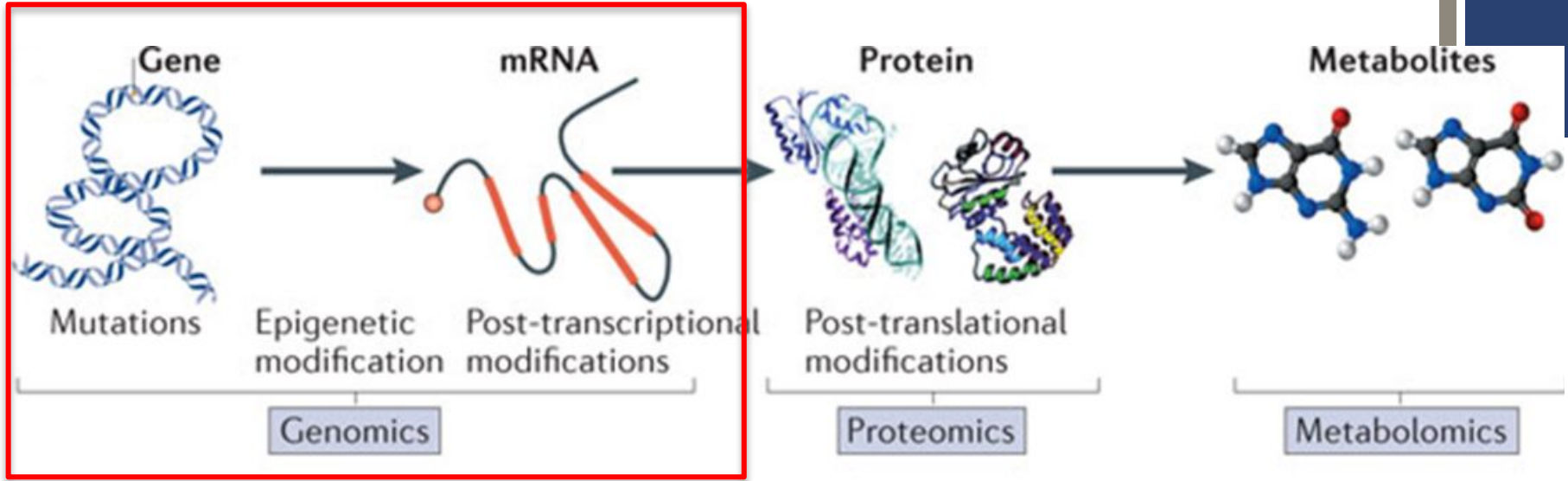
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“-omics” Sciences



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“-omics” Sciences





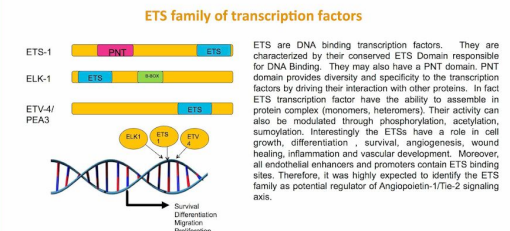
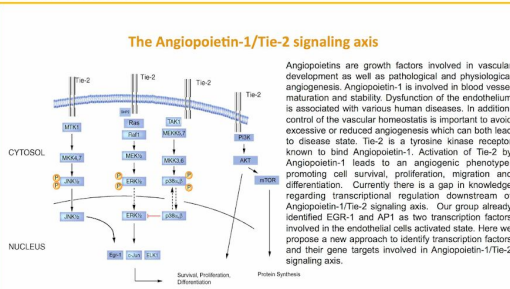
Transcription Factor Binding Site (TFBS) Prediction

A role for the ETS family of transcription factors in Angiopoietin-1/Tie-2 signaling axis



Sharon Harel¹, Javier Sanchez Galan², Mathieu Blanchette², Sheldon Magder¹ and Sabah Hussain³
¹Department of Physiology, McGill University, Montreal, QC
²School of Computer Sciences, McGill University Center for Bioinformatics, Montreal, QC
³Department of Medicine, McGill University

Introduction

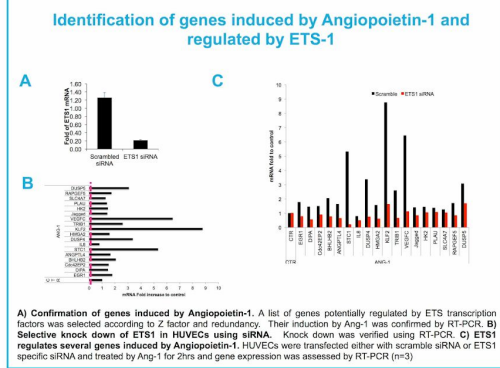
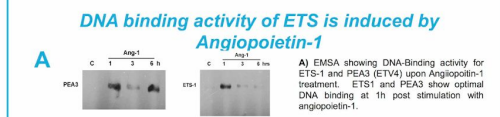
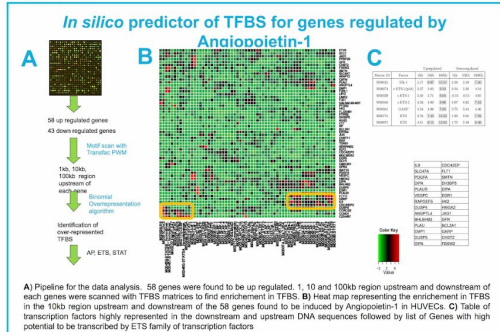


Objectives

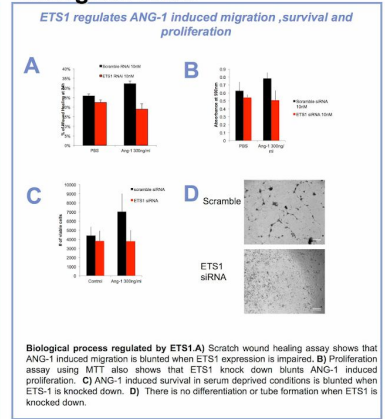
Using a bioinformatic approach we want to identify transcription factors regulating Angiopoietin-1 induced genes. After identifying family of transcription factors highly represented in the data set we want to confirm their DNA binding activity, identify their gene target and the biological process they are regulating.

- Methods**
- All experiments were done in HUVECs. Cells were starved 6hrs before Ang-1 treatment (300ng/ml) and used between passage 3-7.
 - Real-Time PCR was used to verify Microarray data, gene knockdown and gene expression.
 - EMSA was used to confirm *in vitro* DNA binding activity.
 - Knock down were achieved using siRNA and RNAi Max transfection reagent.
 - Differentiation was assessed using matrigel assay.
 - Survival and proliferation were evaluated using cell count and MTT.
 - Migration was evaluated by scratch wound healing assay.

Results



Biological roles



Conclusion

Our results show that:

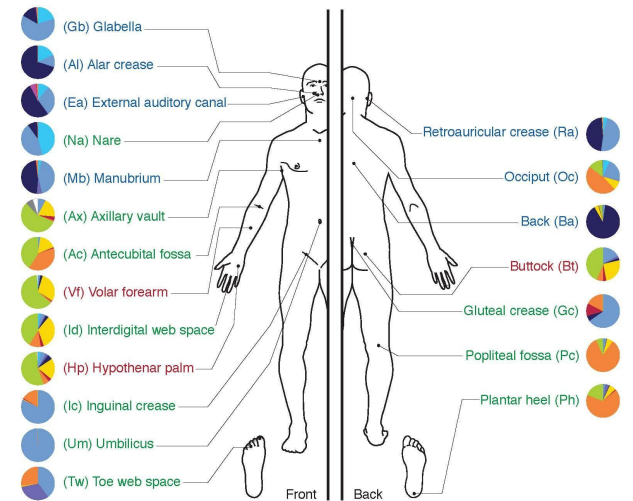
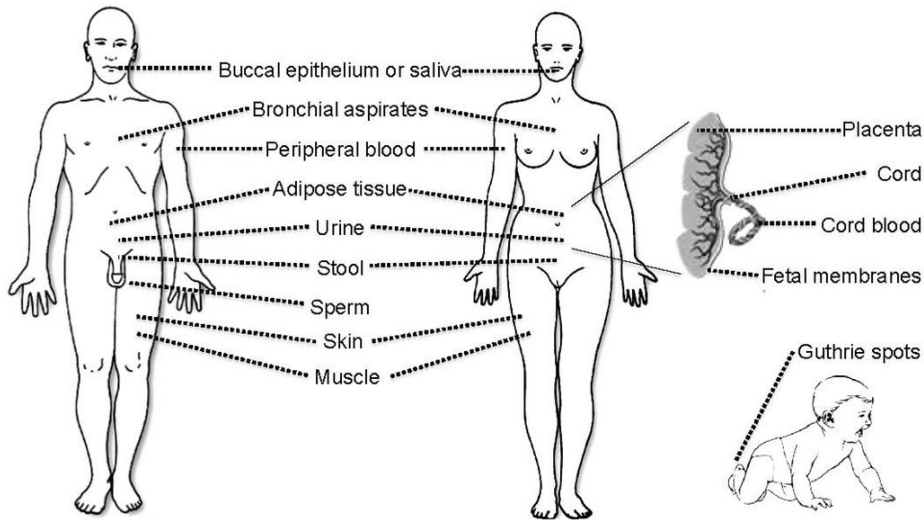
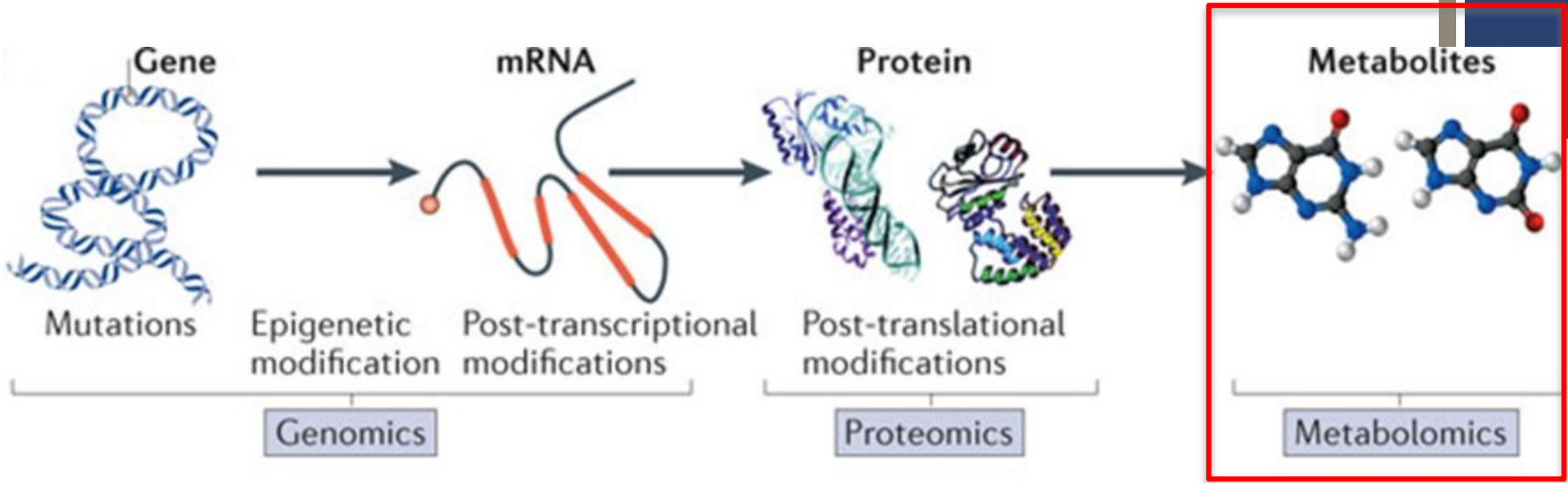
We were able to identify new transcription factors responsible for the angiogenic phenotype associated with Ang-1/Tie-2 activation. In addition we have accumulated evidence regarding which genes they might regulate and we were able to rapidly identify which biological outcome to study.

- FUTURE PLANS**
- Confirm the roles of ELK1 and ETV4
 - Luciferase reporter assay
 - Mobilisation
 - Activity of ETS in Tie-2 low cells
 - Sprouling assay
 - Stably knocking down ETS with lentivirus expressing shRNA
 - Does ETS1 form a complex downstream of Ang-1/Tie-2



+

“-omics” Sciences





Use of Near-Infrared Spectroscopy and Chemoinformatic Analysis of Biological Fluids for the Assessment of Maternal-Fetal Health

Hindawi Publishing Corporation
Journal of Pregnancy
Volume 2011, Article ID 980985, 6 pages
doi:10.1155/2011/980985

Research Article

Use of Near-Infrared Spectroscopic Analysis of Second Trimester Amniotic Fluid to Assess Preterm Births

**Kristin M. Power,¹ Javier E. Sanchez-Galan,² Gary W. Luskey,³
Kristine G. Koski,^{2,4} and David H. Burns^{1,2}**

¹ Department of Chemistry, McGill University, Montreal, QC, Canada H3A 2K6

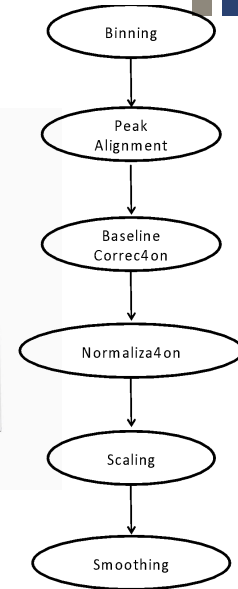
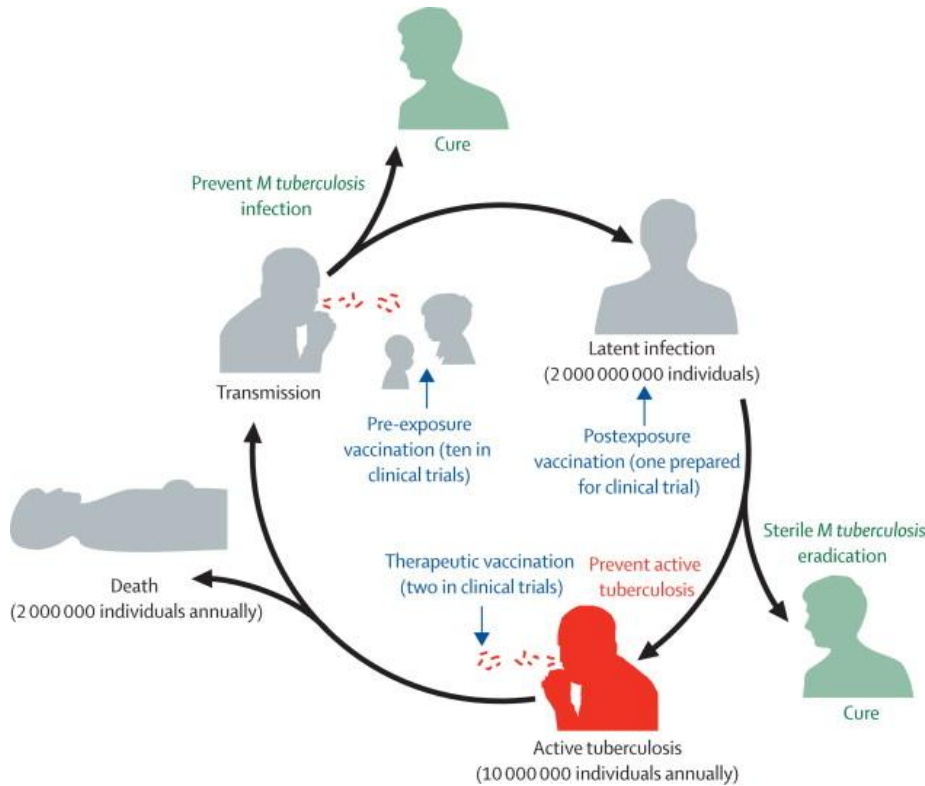
² Division of Experimental Medicine, Faculty of Medicine, McGill University, Montreal, QC, Canada H3A 1A3

³ Division of Perinatal/Fetal Medicine, St. Mary's Hospital Center, Montreal, QC, Canada H3T 1H5

⁴ School of Dietetics and Human Nutrition, McGill University, Macdonald Campus, Montreal, QC, Canada H9X 3V9

Correspondence should be addressed to David H. Burns, david.burns@mcgill.ca

+ TB Project: Serological Biomolecule Profiling and Biopattern Recognition in Tuberculosis Diagnosis and Treatment Monitoring



Imperial College
London



British Embassy
Panama City





PA-19

**ESPECTROMETRÍA DE MASAS MALDI PARA EL ANÁLISIS DE miRNA: UNA NUEVA
POSIBILIDAD EN EL DIAGNÓSTICO DE LA TUBERCULOSIS**

Didio A Ortiz¹, Juan C. Rojas¹, Sara Rosero^{1,3}, Diego Reginensi¹, Rolando A. Gittens^{1,2}, Javier Sanchez Galan^{1,2}, Amador Goodridge^{1,3,4}

PA-74

**UTILIZACION DEL ANÁLISIS DISCRIMINANTE CON MÍNIMOS CUADRADOS
PARCIALES (PLS-DA) EN EL ESTUDIO DE SEÑALES EN ESPECTROMETRIA DE
MASAS**

Yoran Fumont¹, Fernando Merchan², Javier Sanchez-Galan³

PA-79

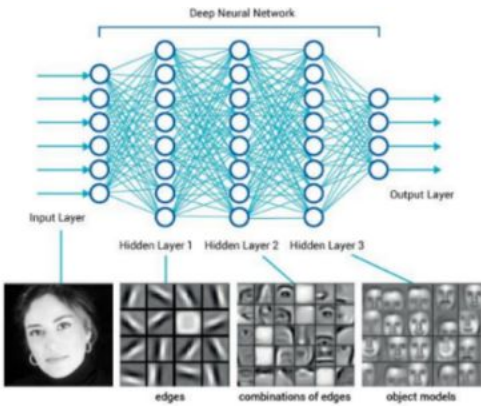
**ESTUDIO DE TECNICAS DE PROCESAMIENTO DE SEÑALES APLICADAS A LOS
PERFILES ESPECTRALES PROVENIENTES DE ESPECTROMETRIA DE MASAS**

Salomón Mitre¹, Fernando Merchan², Javier Sanchez-Galan^{3,4}



+

Bio & Agro



Conference Paper

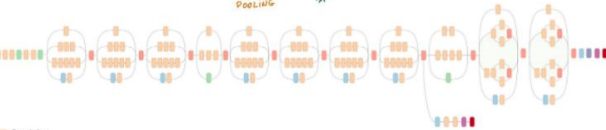
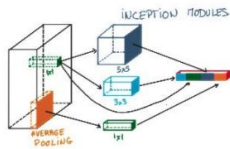
Uso de Redes Neuronales Convolucionales para el Reconocimiento Automático de Imágenes de Macroinvertebrados para el Biomonitorio Participativo

Carlos Quintero¹, Fernando Merchán¹, Aydeé Cornejo², and Javier Sánchez-Galán^{1,3}

¹Universidad Tecnológica de Panamá, Panamá

²Grupo de Investigación en Macroinvertebrados Dulceacuícolas de Panamá. Instituto Conmemorativo Gorgas de Estudios de la Salud (IGES)

³Instituto de Investigaciones Científicas y Servicios de Alta Tecnología AIP (INDICASAT AIP)





Conference Paper

Análisis prospectivo de la detección hiperespectral de cultivos de arroz (*Oryza sativa* L.)

Jorge Serrano¹, José Fábrega¹, Evelyn Quirós², Javier Sánchez-Galán¹, and José Ulises Jiménez¹

¹Universidad Tecnológica de Panamá, Panamá, Panamá, Panamá

²Instituto de Investigación Agropecuaria de Panamá, Penonomé, Coclé, Panamá

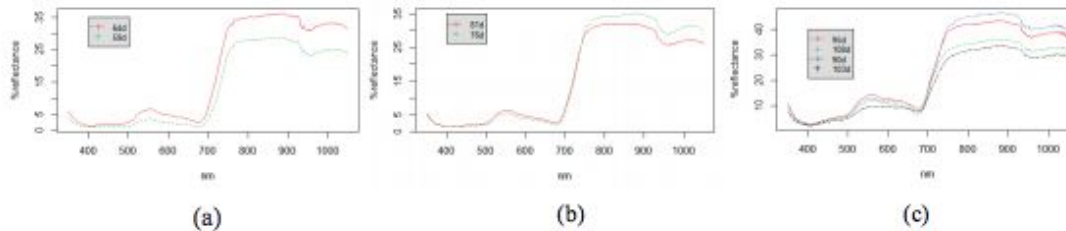


Figura 1: Firmas espectrales promedio de la variedad de arroz FCA 616FL: (a) en estado vegetativo, parcela 1 en rojo y parcela 2 en verde, (b) en estado reproductivo, parcela 1 en rojo y parcela 2 en verde y (c) en estado de maduración, parcela 1 en verde y rojo, y parcela 2 en negro y azul

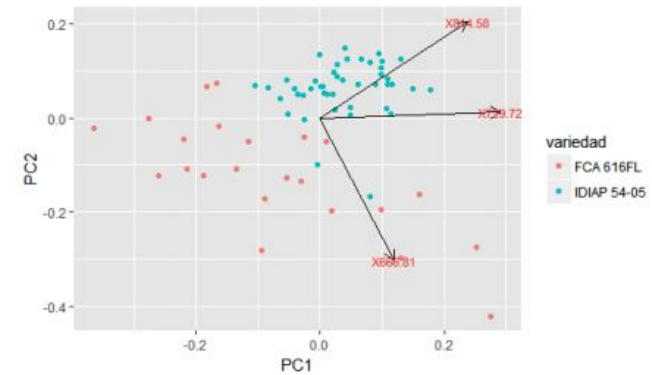


Figura 7: Biplot. Variedades de arroz FCA 616FL e IDIAP 54-05



Plant Factories



DIVISIÓN POLÍTICA DE LA REPÚBLICA DE PANAMÁ,
POR PROVINCIAS Y COMARCAS, AÑO 2010



	LEYENDA
	Provincias
	Países Limitrofes
	A Nombres de Provincias
	A Hidrografía

Escala Gráfica 1: 2,500,000

Kilometros

ELABORADO POR LA SECCIÓN DE CARTOGRAFÍA,
INSTITUTO NACIONAL DE ESTADÍSTICA Y CENSO,
CONTRALORÍA GENERAL DE LA REPÚBLICA

+ Project: “*Effects of LED lights on nutritional quality, growth and development of lettuce in controlled environments*”



2 shelves with 3 levels will be used to make the 5 treatments (5 replications), simultaneously



The experimental unit will consist of a plastic tray (55cm x 55cm x 10cm), with 16 seedlings
An air pump will be used for each tray to keep the oxygen in the hydroponic solution



Substrate for root support will use sponge buckets



Plant Factories



+ Future Climates & Maize Production



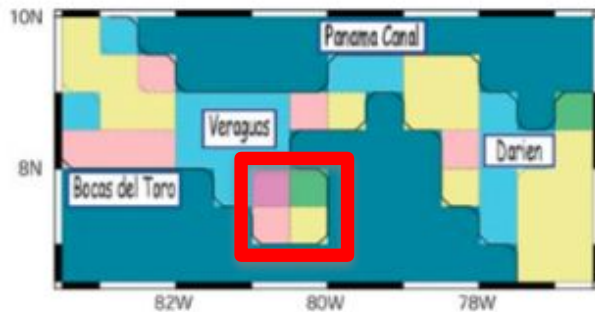
Meteorological Research Institute

Japan Meteorological Agency

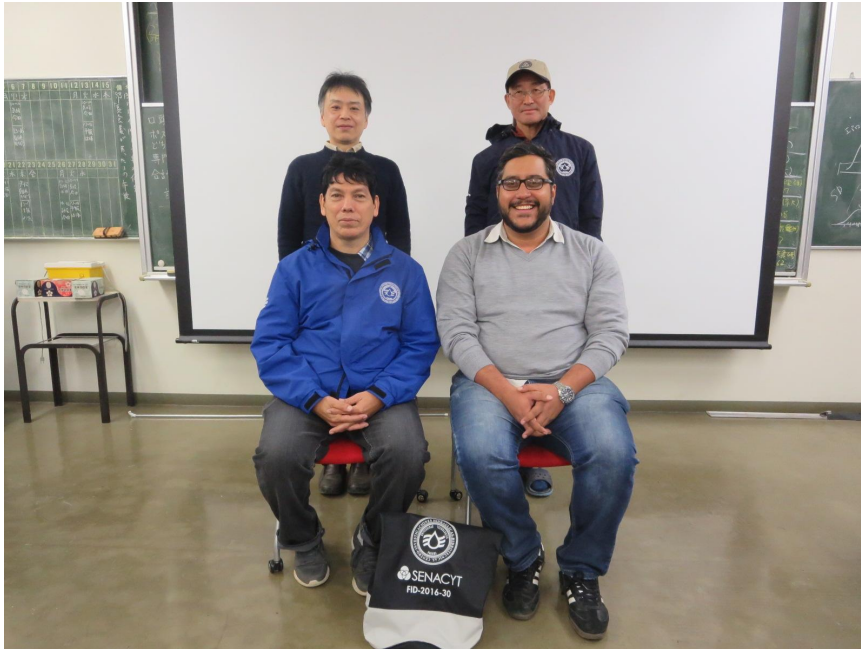
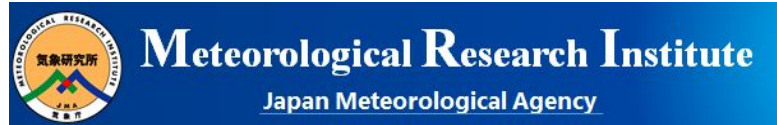


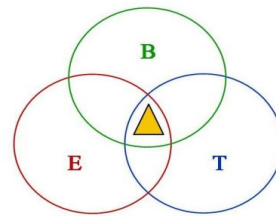
Project: Assessing future climates scenarios using a super-high resolution atmospheric-oceanic general circulation model (GCM) model adjusted for Panama: Implications in the Maize crop yield in the Azuero Peninsula

Objective: to provide an estimation of Maize crop yield in the near features and end-of-century future climates. Firstly, there will be an assessment of the impact of humidity and precipitation, however other variables reducing yield, such as: UV Radiation, Solar Energy, will be explored.



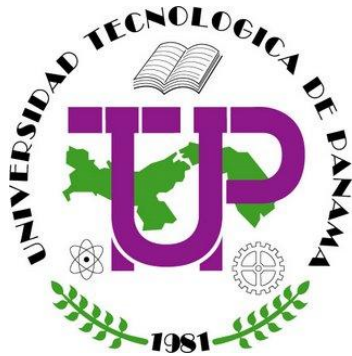
+ Future Climates & Maize Production





“VITA SICUT SCIENTIAM ET PROPOSITUM”

Grupo de Investigación en Biotecnología, Bioinformática y Biología de Sistemas – GIBBS



Javier Sánchez Galán, PhD

javier.sanchezgalan@utp.ac.pa

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