

PARASITRAVAGANZA!

Join us for an online parasite fest



ASP ONLINE CONFERENCE

PROGRAM BOOKLET

THURSDAY 30TH - FRIDAY 31ST JULY 2020



#2020PARASITRAVAGANZA #PARAFEST

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Welcome from the ASP President



Dear Colleague,

the Australian Society for Parasitology Inc. acknowledges Aboriginal peoples and Torres Strait Islander peoples as the Traditional Owners and custodians of the land. We recognise their connection to land, sea and community, and pay our respects to Elders past, present and emerging.

On behalf of the ASP Council and the 2020 Conference Organising Committee, we extend a warm welcome to the 2020 ASP Online Conference *Parasitravaganza 2020*, Thursday 30th - Friday 31st July 2020.

This conference, hosted by the Australian Society for Parasitology, includes an outstanding mix of quality international and Australian students and early career researchers (ECRs) as they discuss the latest research and state-of-the-art technologies in parasitology.

The Conference will begin with Early Career Researcher career development events on Thursday 30th July 2020 from 1230 until 6pm AEST online and continue with scientific presentations on Friday 31st July 2020 from 1 until 6pm.

The scientific posters submitted for this conference will be online until the end of August 2020 so please take a chance to read through them on the ASP website <https://www.parasite.org.au/conferences/parasitravaganza/posters/>.

We would like to thank you, the ASP Membership, for supporting our Society and this Conference so enthusiastically.

Professor Barbara Nowak

President, ASP

ABSTRACTS

Session 3

S13. TcAMPK: a cellular energy homeostasis hub regulator with unique characteristics in *Trypanosoma cruzi*

Tamara Sternlieb, Alejandra C. Schoijet, Patricio D. Genta, Guillermo D. Alonso.

Instituto de Investigaciones en Ingeniería Genética y Biología Molecular "Dr. Héctor N. Torres" -CONICET

The AMP-activated protein kinase (AMPK) is a heterotrimeric enzyme involved in maintaining energy homeostasis in response to different stresses. During the transition between the mammalian host and the insect vector, *Trypanosoma cruzi* (Chagas disease), faces different environmental fluctuations, all of which prompt the parasite to remodel its metabolism to adapt and survive. Recently, it was shown that *Trypanosoma brucei* AMPK is involved in the differentiation process and in surface protein expression changes in response to nutritional stress.

We identified four genes for the AMPK subunits of *T. cruzi* (α 1 and α 2 catalytic subunits, β and γ regulatory subunits). The β and γ subunits are largely conserved in their domain structure. However, the alpha subunits show significant sequence, structure and evolutionary differences from the human counterparts. The presence of these subunits in *T. cruzi* epimastigotes was confirmed by several experimental approaches. TcAMPK α subunits over-expression in epimastigotes showed opposite effects on growth rate. AMPK activity is also upregulated in epimastigote under starvation. Each of these subunits could complement the 'glucose dependent' phenotype of *S. cerevisiae* conditional mutants lacking SNF1. Starvation assays with AMPK α over-expressing parasites also showed a role of AMPK in autophagy. Our results confirm the presence of a functional AMPK orthologue in *T. cruzi*. We also explore the pathways in which TcAMPK may be involved using *in silico* analysis of putative substrates.