Research Article

**Helicobacter Pylori** Infection Triggers PERK-Associated Survivin Loss in Gastric Tissue Samples and Cell Lines

Paula Díaz$^{1,2}$, Alejandra Román$^{2}$, Gonzalo Carrasco-Aviño$^{2}$, Andrés Rodríguez$^{2,4}$, Alejandro H Corvalán$^{3,4,5}$, Sergio Lavandero$^{2,4,6,*}$ and Andrew FG Quest$^{1,2,4,*}$

$^{1}$Laboratory of Cellular Communication, Center for the Study of Exercise, Metabolism and Cancer (CEMC), Program of Cell and Molecular Biology, Institute of Biomedical Sciences (ICBM), Faculty of Medicine, Universidad de Chile, Santiago, Chile

$^{2}$Advanced Center for Chronic Diseases (ACCDiS), Faculty of Chemical and Pharmaceutical Sciences & Faculty of Medicine, Universidad de Chile, Santiago, Chile

$^{3}$Advanced Center for Chronic Diseases (ACCDiS), Faculty of Medicine, Pontificia Universidad Católica de Chile, Santiago, Chile

$^{4}$Corporación Centro de Estudios Científicos de las Enfermedades Crónicas (CECEC), Santiago, Chile

$^{5}$Laboratory of Oncology, Department of Hematology and Oncology, Pontificia Universidad Católica de Chile, Santiago, Chile

$^{6}$Department of Internal Medicine (Cardiology Division), University of Texas Southwestern Medical Center, Dallas, TX, USA

*Corresponding Authors: Dr. Andrew Quest, Center for the Study of Exercise, Metabolism and Cancer (CEMC), Facultad de Medicina, Universidad de Chile, Av. Independencia 1027, Santiago 8380453, Chile, Tel: +56-2-29786832; E-mail: aquest@med.uchile.cl

Dr. Sergio Lavandero, Advanced Center for Chronic Diseases (ACCDiS), Faculty of Chemical and Pharmaceutical Sciences & Faculty of Medicine, Universidad de Chile, Santiago 8380492, Chile, Tel: +56-2-29782919; E-mail: slavander@uchile.cl

**Received:** 25 November 2020; **Accepted:** 18 December 2020; **Published:** 08 January 2021

**Citation:** Paula Díaz, Alejandra Román, Gonzalo Carrasco-Aviño, Andrés Rodríguez, Alejandro H Corvalán, Sergio Lavandero and Andrew FG Quest. *Helicobacter Pylori* Infection Triggers PERK-Associated Survivin Loss in Gastric Tissue Samples and Cell Lines. Journal of Cancer Science and Clinical Therapeutics 5 (2021): 063-082.
Suppl. Figure 1: (A) Viability in uninfected (*H. pylori -*) and *Hp*-infected (*H. pylori +*) AGS cells. Viability was measured using the MTS assay after 24 h *Hp* infection. PERK silencing (siRNA PERK) was achieved by transfecting AGS cells with 100 nM PERK siRNA 16 h before *Hp* infection. Non-specific siRNA (100 nM) was used as control (*-*). n=5, *p<0.05, **p<0.01, ***p<0.001; mean + SEM; (B) Proliferation in uninfected (*H. pylori -*) and *Hp*-infected (*H. pylori +*) AGS cells. Proliferation was detected 24 h after *Hp* infection by measuring BrdU incorporation using a colorimetric BrdU assay. AGS cells were transfected with 100 nM PERK siRNA (siRNA PERK) 16 h prior *Hp* infection. Non-specific siRNA (100 nM) was used as control (*-*). n=3, *p<0.05, ***p<0.001; mean + SEM.
Suppl. Figure 2: Time course of P-PERK(Thr982) protein levels in *Hp* infected (*H. pylori +*) AGS cells at 0, 4, 6, 16 and 24 h. In parallel, uninfected control cells were kept in medium for 24 h (*H. pylori -*). Representative immunoblots are shown together with the corresponding P-PERK(Thr982)/PERK ratios, whereby P-PERK(Thr982) and PERK were normalised to β-actin abundance. AGS cells were pre-incubated for 1 h with 25 μM GSK2606414 before *Hp* infection. n=2, *p*<0.05, mean + SEM. Dotted lines indicate where lanes, from the same immunoblot, have been removed for clarity.
**Suppl. Figure 3:** PUMA α/β protein abundance in uninfected (*H. pylori* -) and *Hp*-treated (*H. pylori*) AGS cells after 4 and 24 h. Representative immunoblots with corresponding graphic quantifications showing mean relative abundance of PUMA α/β protein (normalised to β-actin abundance). Gastric cells were infected with *Hp* for 4 and 24 h; in parallel, uninfected control cells were kept in medium for 24 h. PERK silencing (siRNA PERK) was achieved by transfecting AGS cells with 100 nM PERK siRNA 16 h before *Hp* infection. Non-specific siRNA (100 nM) was used as control (-). n=2, *p*<0.05, mean ± SEM.
Suppl. Figure 4: (A) eIF2α protein activation, measured as P-eIF2α(Ser51), in uninfected (H. pylori -) and Hp-treated (H. pylori +) AGS cells after 4 and 24 h. Representative immunoblots with corresponding graphic quantification showing mean relative protein abundance of P-eIF2α(Ser51) (normalised to β-actin abundance). Gastric cells were infected with Hp for 4 and 24 h; in parallel, uninfected control cells were kept in medium for 24 h. PERK silencing (siRNA PERK) was achieved by transfecting AGS cells with 100 nM PERK siRNA 16 h before Hp infection. Non-specific siRNA (100 nM) was used as control (-). n=3; mean + SEM. (B) P-eIF2α(Ser51) abundance in uninfected (H. pylori -) and Hp-treated (H. pylori +) AGS cells after 24 h. Representative immunoblots with corresponding graphic quantification showing mean relative protein abundance of P-eIF2α(Ser51) (normalised to β-actin abundance). AGS cells were pre-incubated with 25 μM GSK2606414, a selective PERK inhibitor, 1 h before Hp infection. n=3, *p<0.05; mean + SEM. Dotted lines indicate where lanes, from the same immunoblot, have been removed for clarity.
Suppl. Figure 5: (A-B) eIF2α protein abundance in uninfected (H. pylori -) and Hp-infected (H. pylori +) GES-1 (A) and AGS (B) cells after 24 h. Representative immunoblots are shown together with the corresponding quantification of eIF2α protein normalised to Hsp90 (A) or β-actin (B) abundance. GES-1 and AGS cells were pre-incubated for 1 h with 25 μM GSK2606414, a selective PERK inhibitor, before Hp infection. (A) n=2; mean + SEM. (B) n=2; mean + SEM. Dotted lines indicate where lanes, from the same immunoblot, have been removed for clarity.