

# Archaea and Bacteria acclimate to high total ammonia in a methanogenic reactor treating swine waste

Sofia Esquivel-Elizondo<sup>1,2§</sup>, Prathap Parameswaran<sup>3§</sup>, Anca G. Delgado<sup>1</sup>, Juan Maldonado<sup>1</sup>, Bruce E. Rittmann<sup>1,2</sup>, and Rosa Krajmalnik-Brown<sup>1,2#</sup>

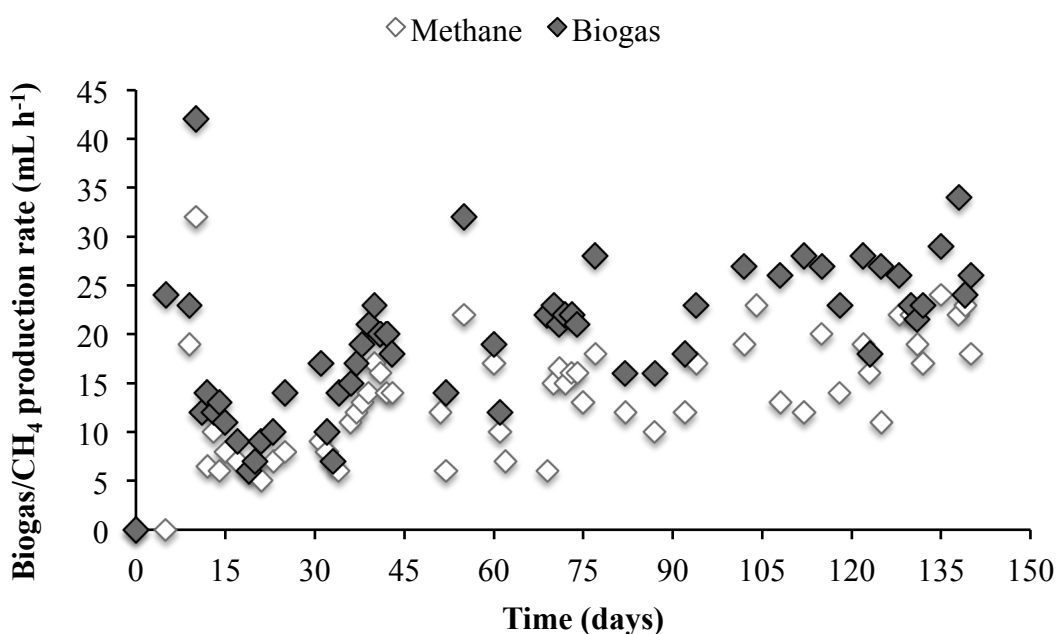
<sup>1</sup>Swette Center for Environmental Biotechnology, The Biodesign Institute, Arizona State University, P.O. Box 875701, Tempe, AZ 85287-5701, USA

<sup>2</sup>School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, AZ

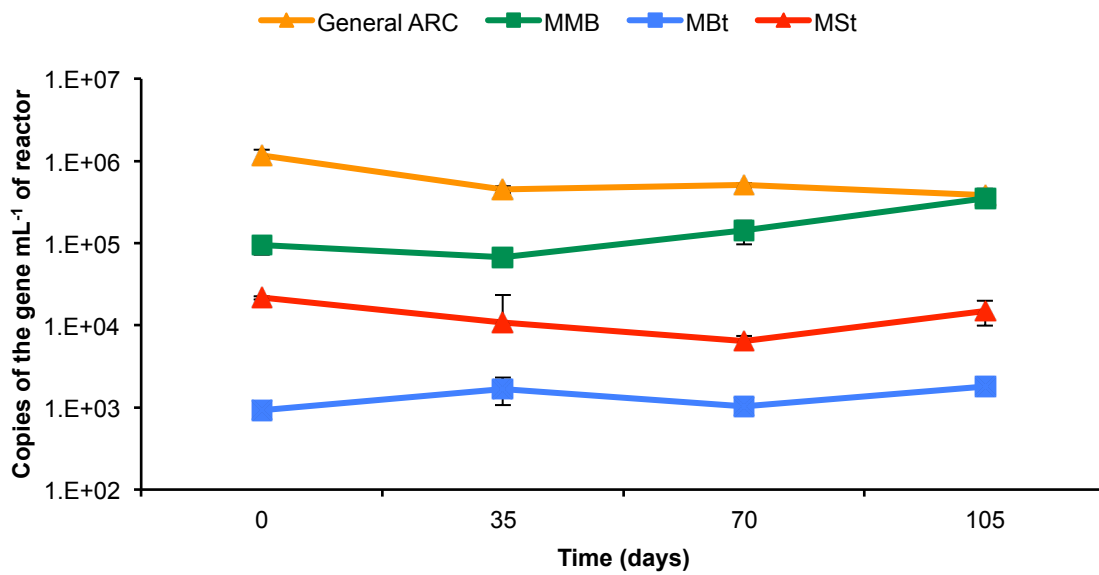
<sup>3</sup>Department of Civil Engineering, Kansas State University, 2118 Fiedler Hall, Manhattan, KS 66506

§Authors contributed equally to this work

#Correspondence should be addressed to Rosa Krajmalnik-Brown; dr.rosy@asu.edu



**Figure S1.** Methane and total biogas production rates in the semi-continuous reactor through 140 days.



**Figure S2.** Gene copies per mL of reactor for General Archaea (ARC), *Methanomicrobiales* (MMB), *Methanobacteriales* (MBt), and *Methanosaetaceae* (MSt) over the duration of operation of the semi-continuous reactor.

**Table S1.** Summary COD mass balances at different phases during the semi-continuous bioreactor operation. The % error indicates the deviation in the closure of the COD mass balance. The times for the analysis were selected based on steady methane production.

Time (day, cycle)	Soluble COD <sub>in</sub> (g)	Total COD <sub>in</sub> (g)	Soluble COD <sub>out</sub> (g)	Total COD <sub>out</sub> (g)	COD <sub>out</sub> as CH <sub>4</sub> (g)	TCOD <sub>in</sub> - [Total COD <sub>out</sub> + COD <sub>out</sub> as CH <sub>4</sub> ] (g)	% error in COD balance
53, 1	0.13	1.97	0.09	1.14	0.60	- 0.23	12
94, 2	0.64	2.51	0.14	1.74	0.89	- 0.12	4.8
122, 3	0.33	1.94	0.13	1.13	0.89	- 0.08	- 4.1
138, 3	0.31	2.66	0.13	1.63	0.11	- 0.02	- 0.75