

# Research at the Lab. of Aquaculture & Artemia Reference Center

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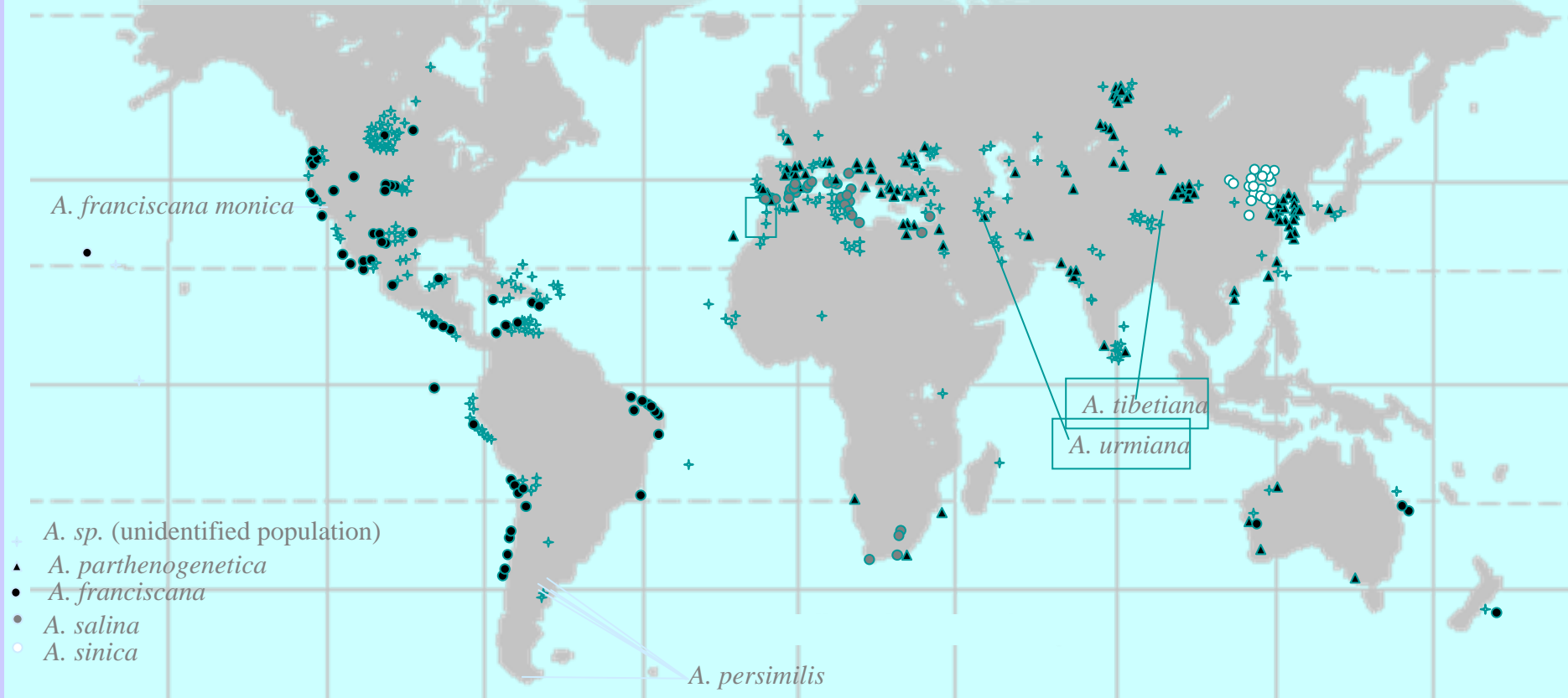
**Opportunities for cooperation between  
ChinAquaNet and Ghent University**  
Ghent, August 31, 2007

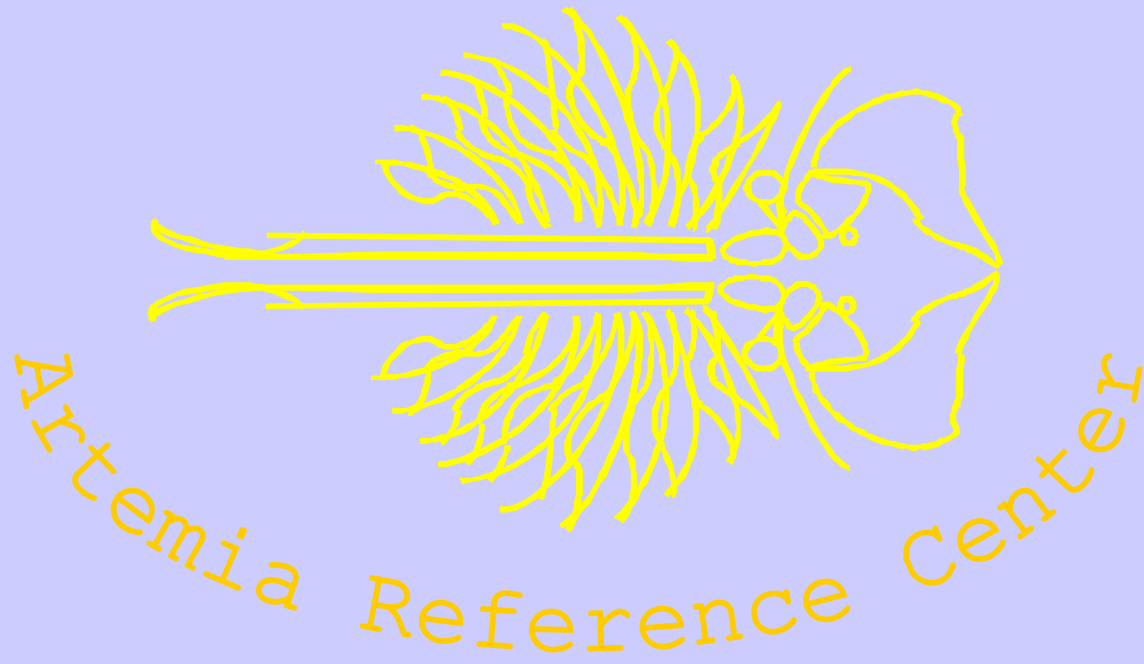
A photograph of several Artemia nauplii (brine shrimp larvae) in a petri dish. The larvae are translucent, yellowish, and have long, feathery appendages. They are scattered across the white surface of the dish. The text "Artemia research" is overlaid in the center.

# Artemia research

# World distribution of *Artemia* species

- bisexual species : *A. salina*, *A. urmiana*, *A. sinica*, *A. tibetiana*, *A. franciscana*, *A. persimilis*
- parthenogenetic populations



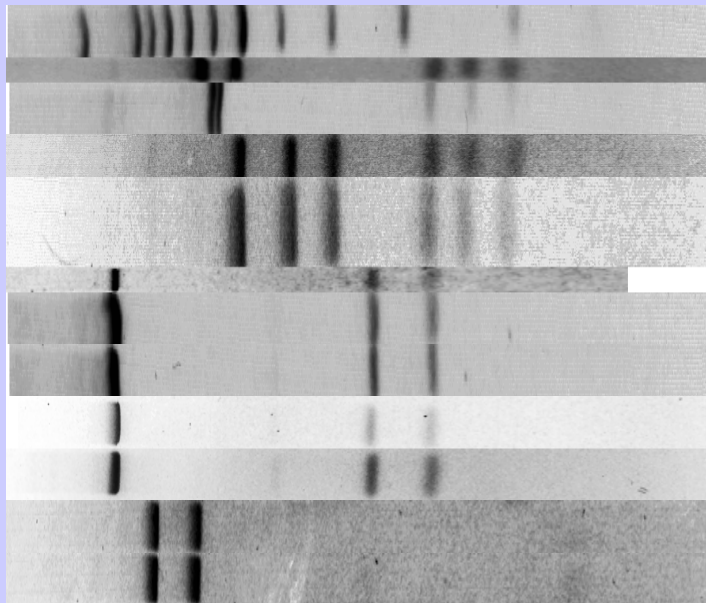


established in 1978 upon suggestion of the FAO

# Genetic fingerprinting patterns (RFLP) for *Artemia* species authentication

## RFLP HpaII

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100 bp DNA ladder

A. salina	Mégrine, Tunisia	1268
A. persimilis	Argentina*	1321
parthenogenetic Art.	Aibi Lake, Xinjiang, China	1236
parthenogenetic Art.	Vineta Swakopmund, Namibia	1186
A. franciscana	Vinh Chau, Vietnam	1301
A. franciscana	San Francisco Bay, California, USA	1258
A. franciscana	Vinh Chau, Vietnam	1456
A. franciscana	Macau, Brazil	1300
A. franciscana	Great Salt Lake, USA	1287
A. sinica	Xiechi Lake, Yuncheng, Shanxi, China	1218
A. sinica	Yimeng area, Inner Mongolia, China*	1188



## Developing new tools for *Artemia* population studies:

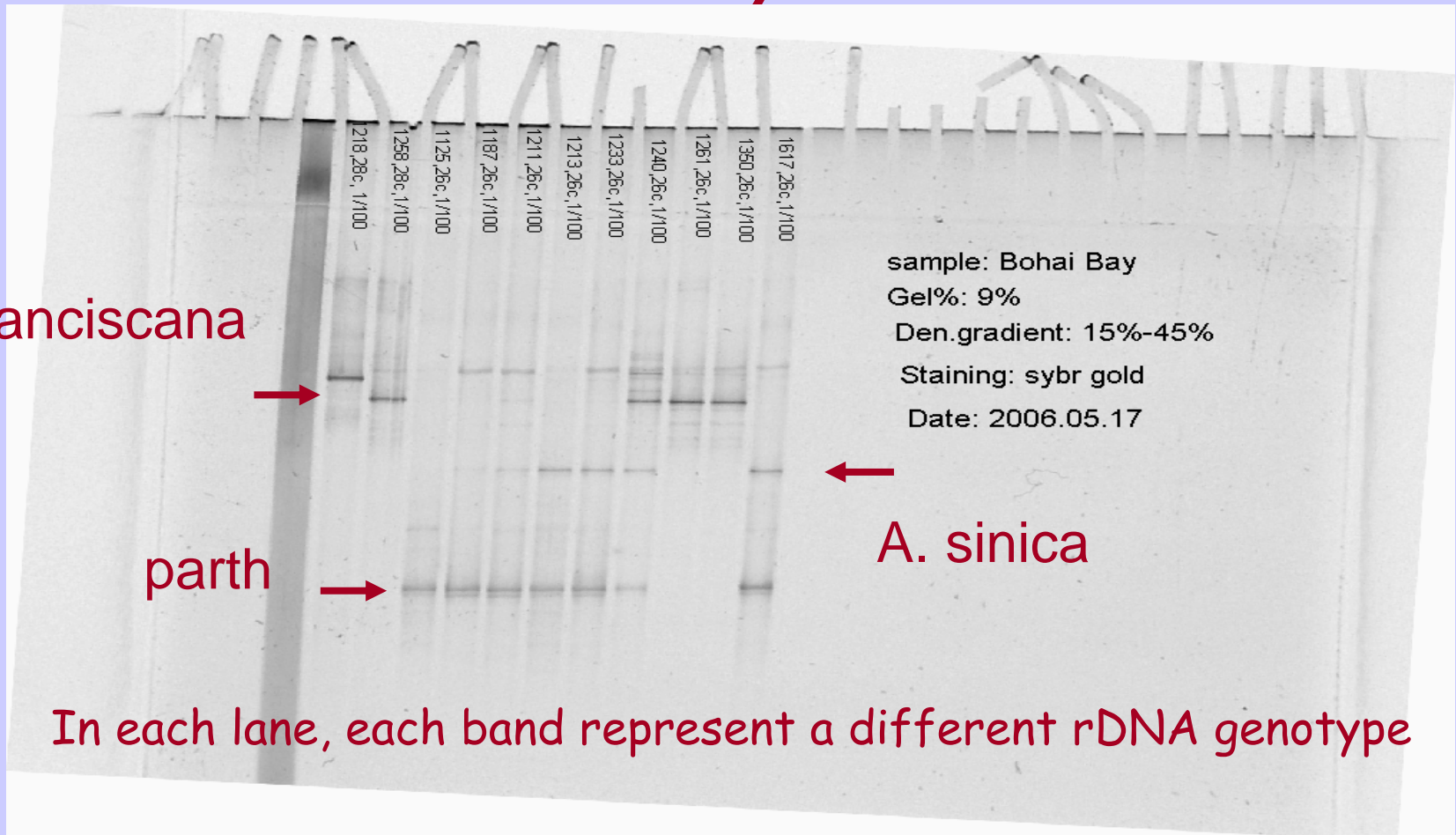
- In a lot of *Artemia* site, populations seem to contain more than one species or strain
- Commercial products can contain *Artemia* cysts from different origin



# Bohai bay, China

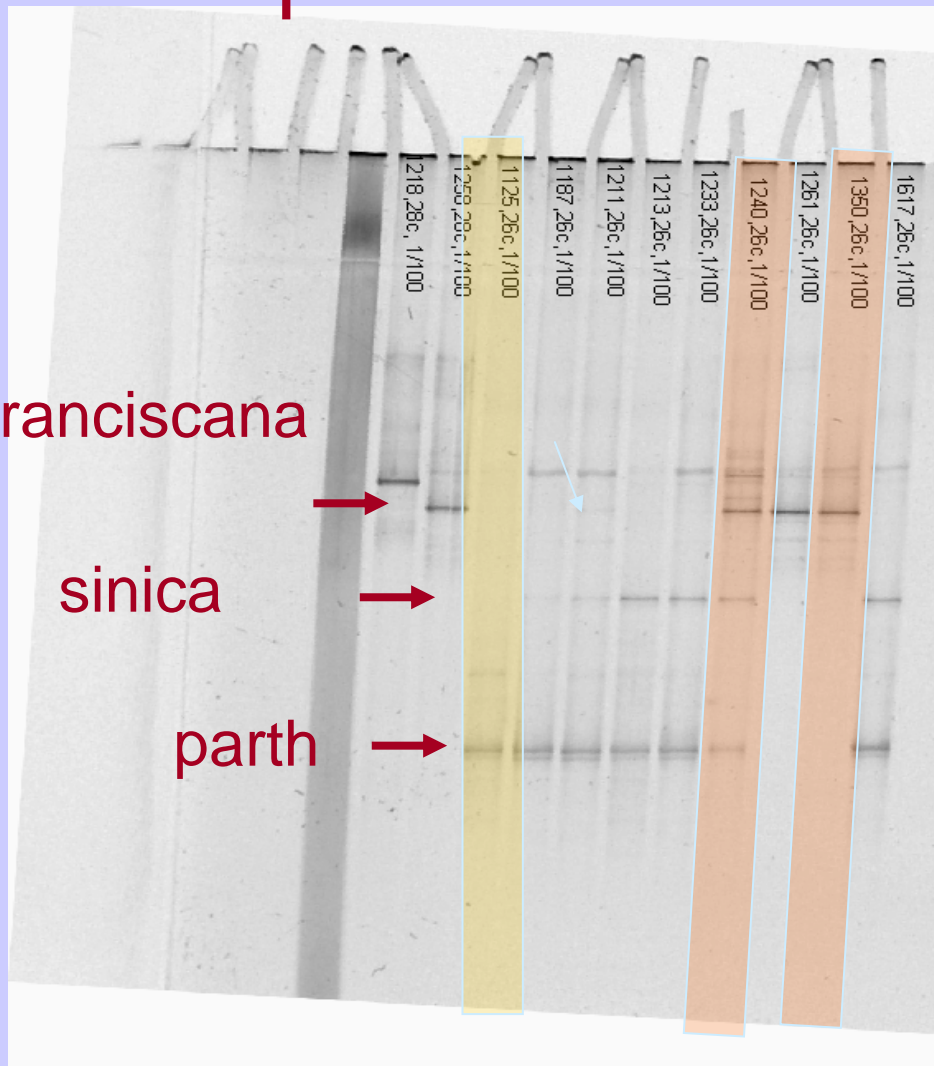


# DGGE on *Artemia* from Bohai Bay:





# DGGE on Artemia: comparison with individual analysis



ARC code	<i>A. parth</i> %	<i>A. sinica</i> %	<i>A. franc</i> %	?
1125	97	3	0	0
1211	93	7	0	0
1617	68	32	0	0
1219	91	3	6	0
1187	100	0	0	0
1616	14	0	80	6
1240	18	25	39	18
1213	97	3	0	0
1233	93	7	0	0
1261	0	0	100	0
1350	0	0	97	3

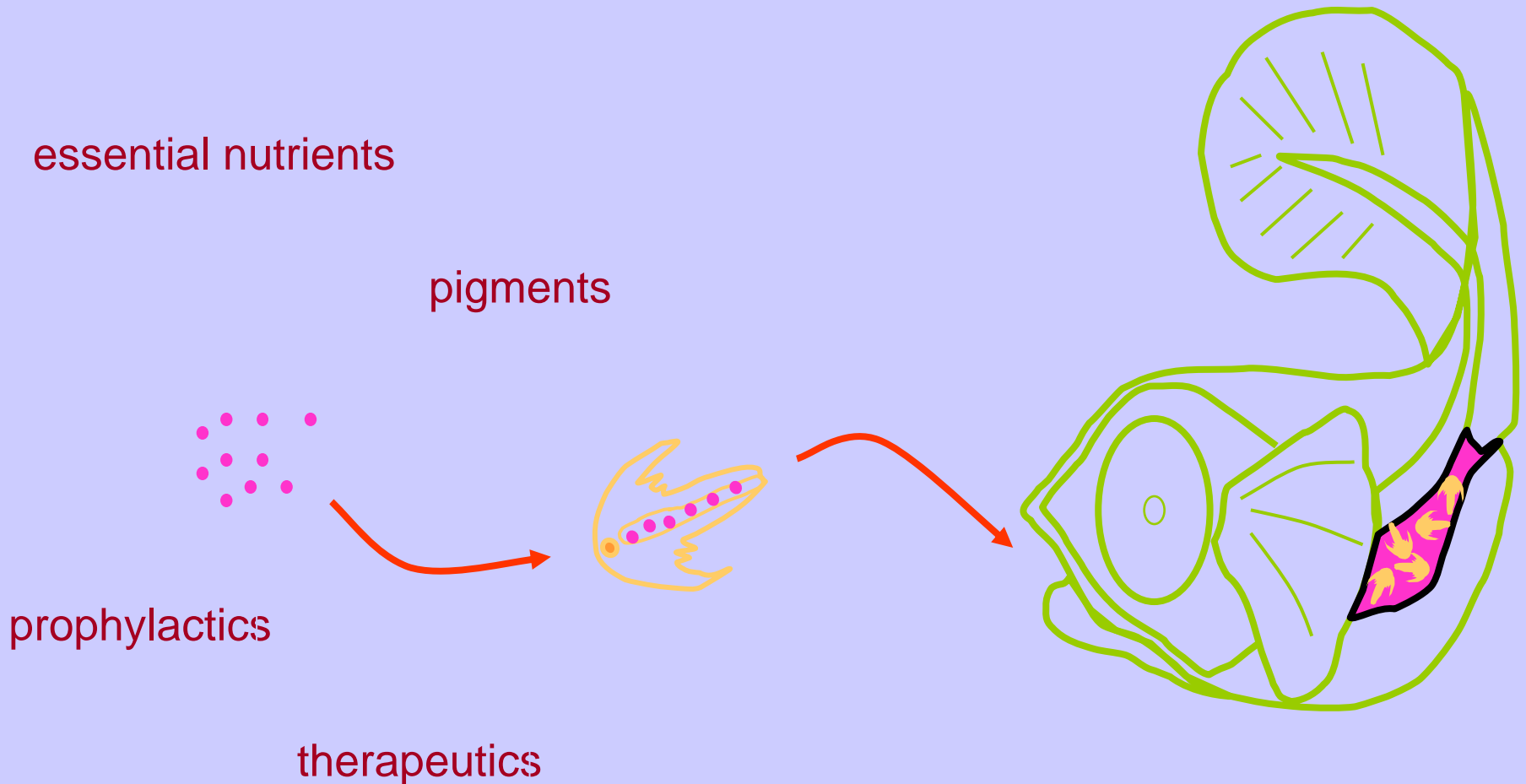
# Nutritional research

## Artemia enrichment



10-day old seabass larva feeding on Artemia

# Bioencapsulation or Enrichment









Lipid emulsion  
in gut of  
Artemia

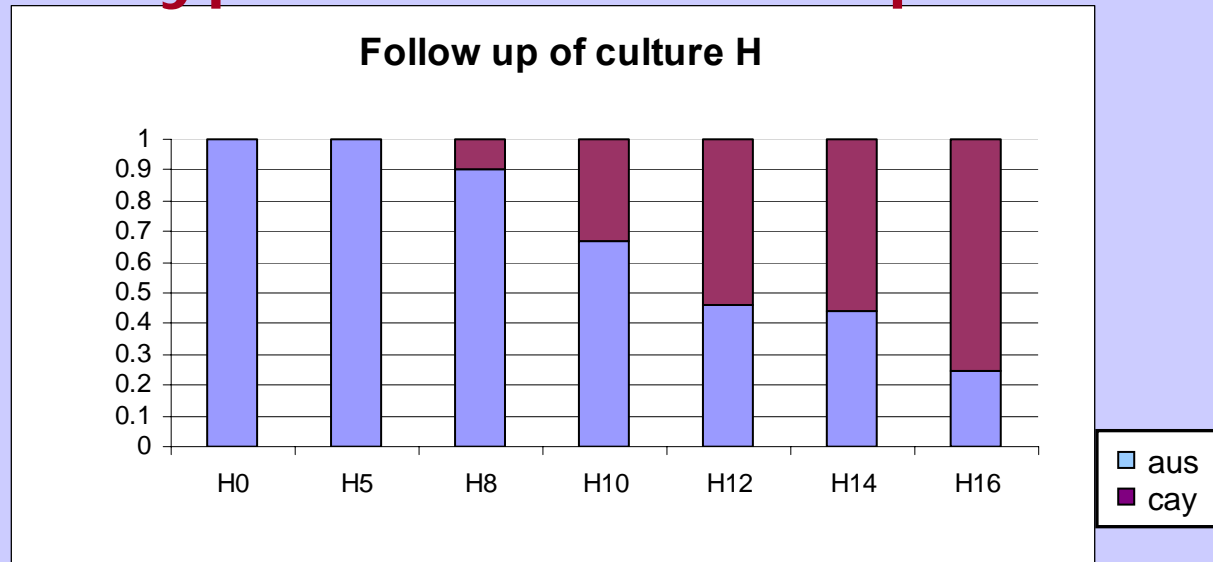


# Nutritional research

## *Brachionus* genetic diversity

(Foto: J.B.Leonardsen)

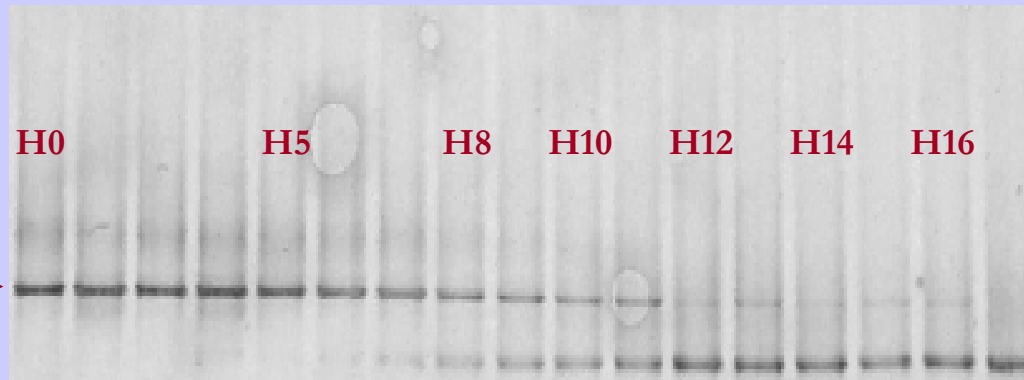
# DGGE for studying mixtures of cryptic *Brachionus* species



RFLP on individuals

DGGE on mixtures

Austria →



← Cayman

17 consecutive batches (3 days) of *Brachionus* culturing on industrial scale

# Larviculture Research



Turbot



*Macrobrachium rosenbergii*



Penaeid shrimp



Sea bass



cobia



Mud crab : *Scylla* spp.

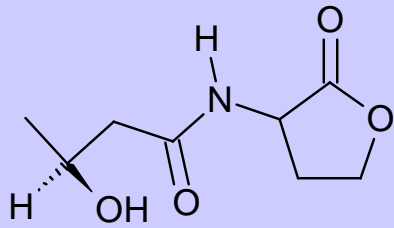
# Host-microbial interactions

## Quorum sensing



# Quorum sensing in *Vibrio harveyi*

✓ QUORUM SENSING (QS) = Bacterial cell-to-cell communication with signal molecules

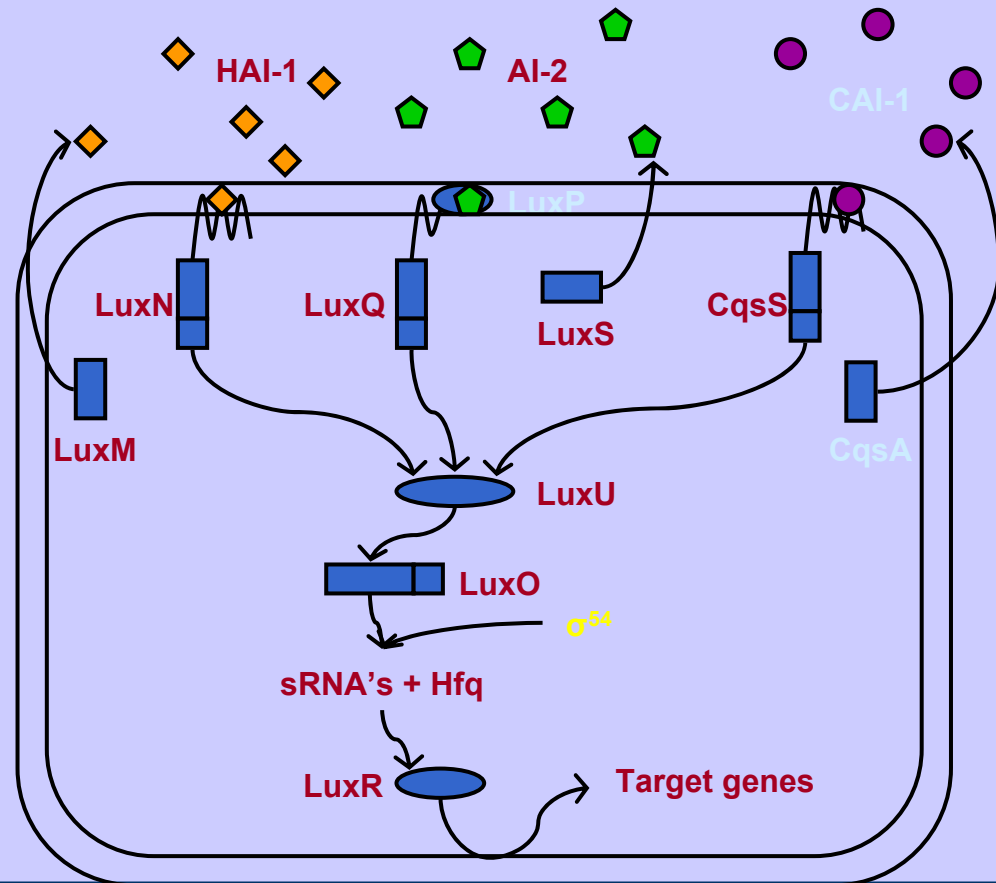


**HAI-1 = AHL**

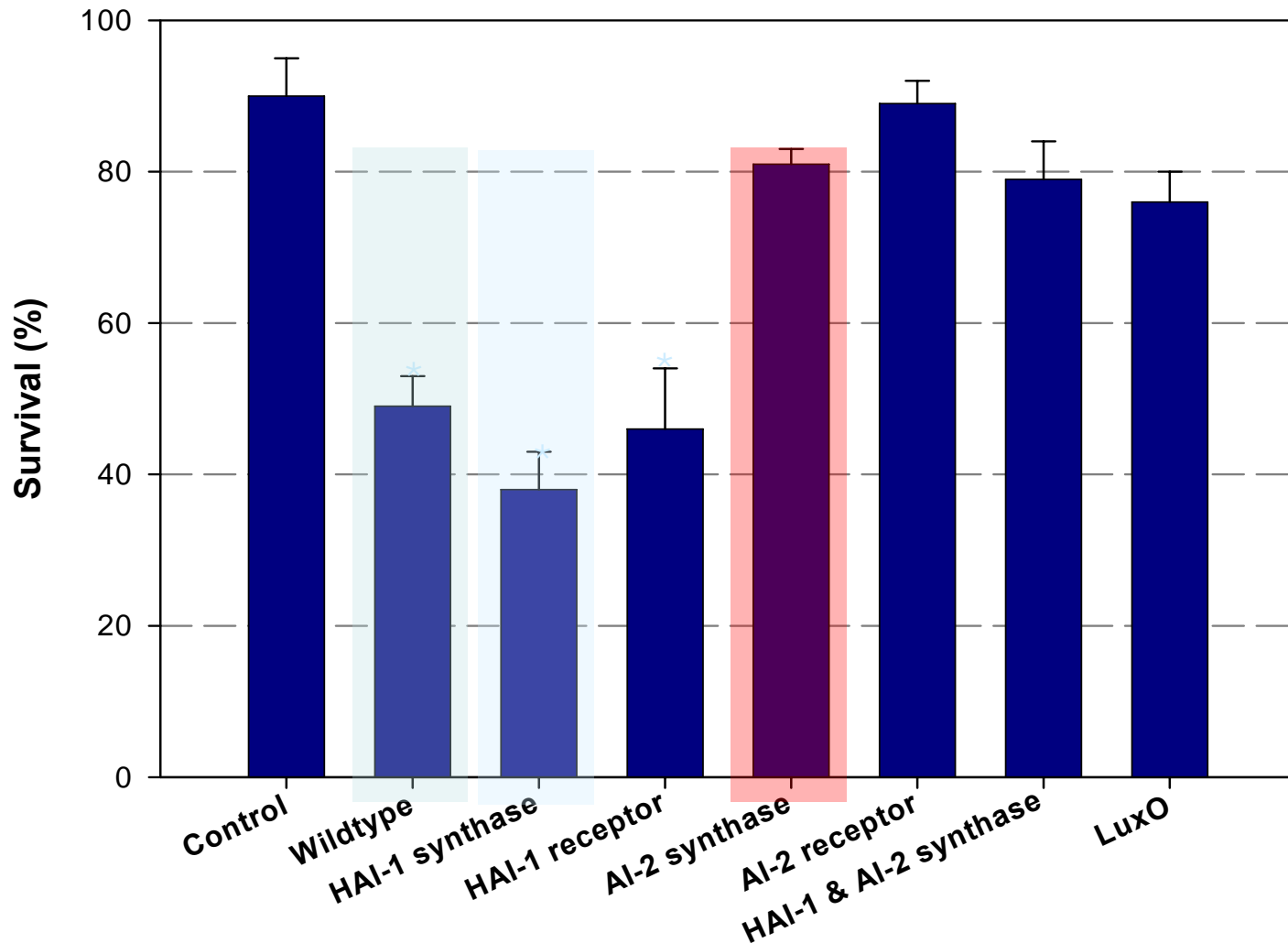


**AI-2**

**furanosyl borate diester**



# Artemia challenge with QS MUTANTS of Vibrio BB120



# Effect of AHL on Turbot larvae survival in % on DAH7

Factor	AHL addition	
	-	+
EC addition	(Treatment 1)	(Treatment 2)
	-	92.1 ± 8.3 <sup>bc</sup>
		10.4 ± 10.0 <sup>a</sup>
	(Treatment 3)	(Treatment 4)
	EC3	62.1 ± 24.4 <sup>b</sup>
		2.1 ± 3.5 <sup>a</sup>
	(Treatment 5)	(Treatment 6)
	EC5	96.7 ± 4.0 <sup>c</sup>
		94.3 ± 7.1 <sup>bc</sup>

# Effect of AHL on *Macrobrachium* larviculture

