

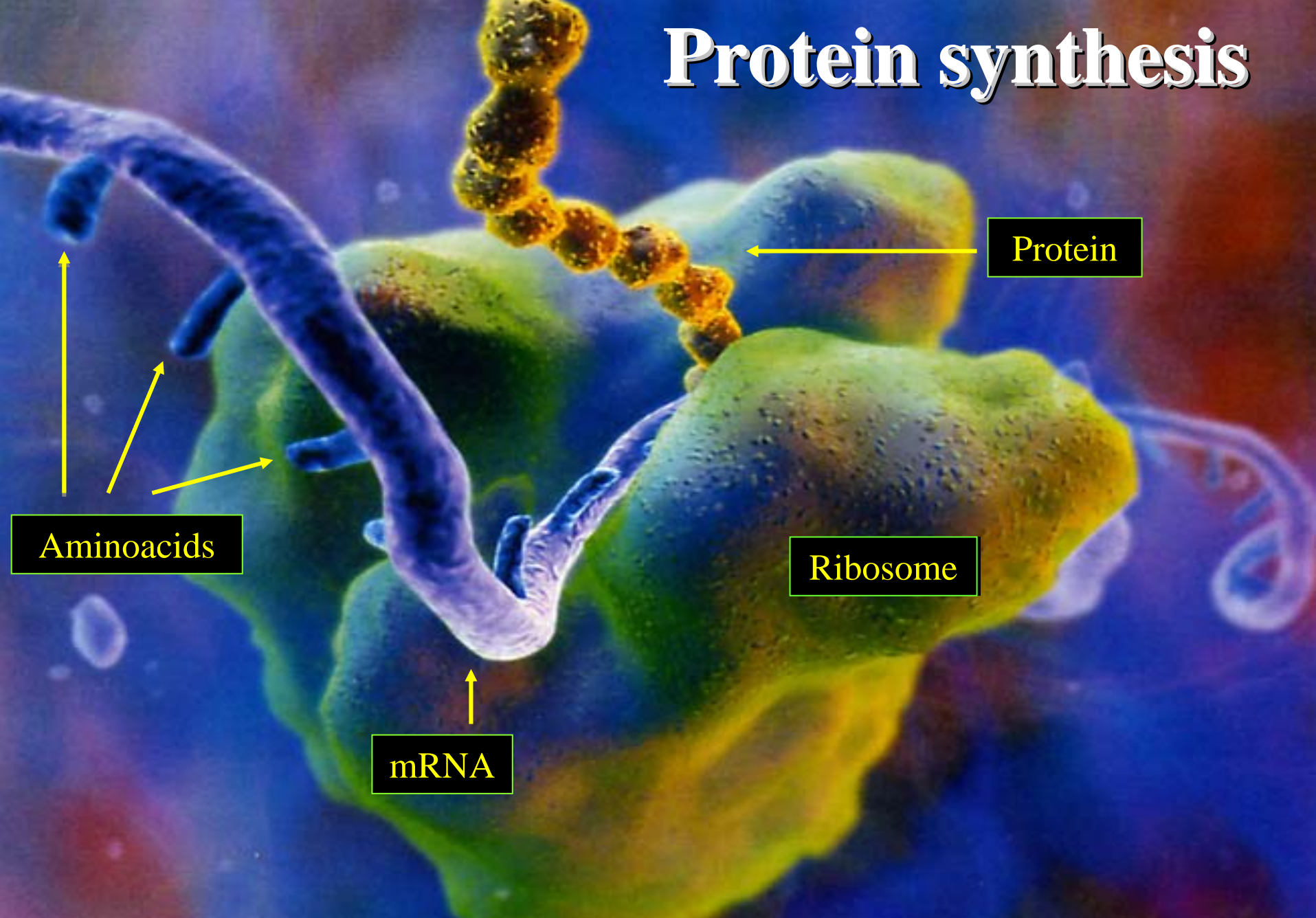
Quantifying *Calanus finmarchicus* growth and dormancy

using AARS activity

Lidia Yebra, Andrew G. Hirst, Santiago Hernández-León



Protein synthesis



Aminoacids

mRNA

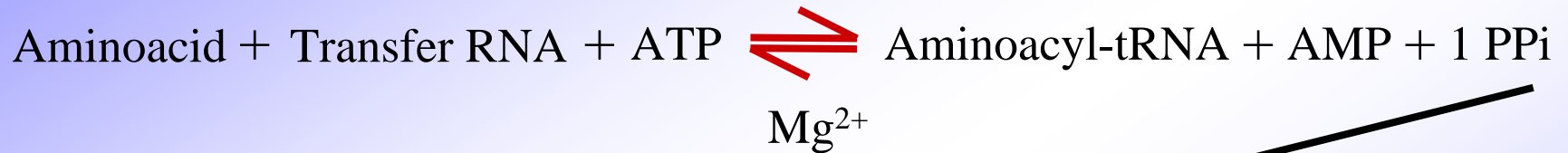
Ribosome

Protein

Ribosome reading a RNA chain prior to the synthesis of a protein (Whitesides, 2001).

Aminoacyl-tRNA synthetases mechanism

Aminoacyl-tRNA synthetase



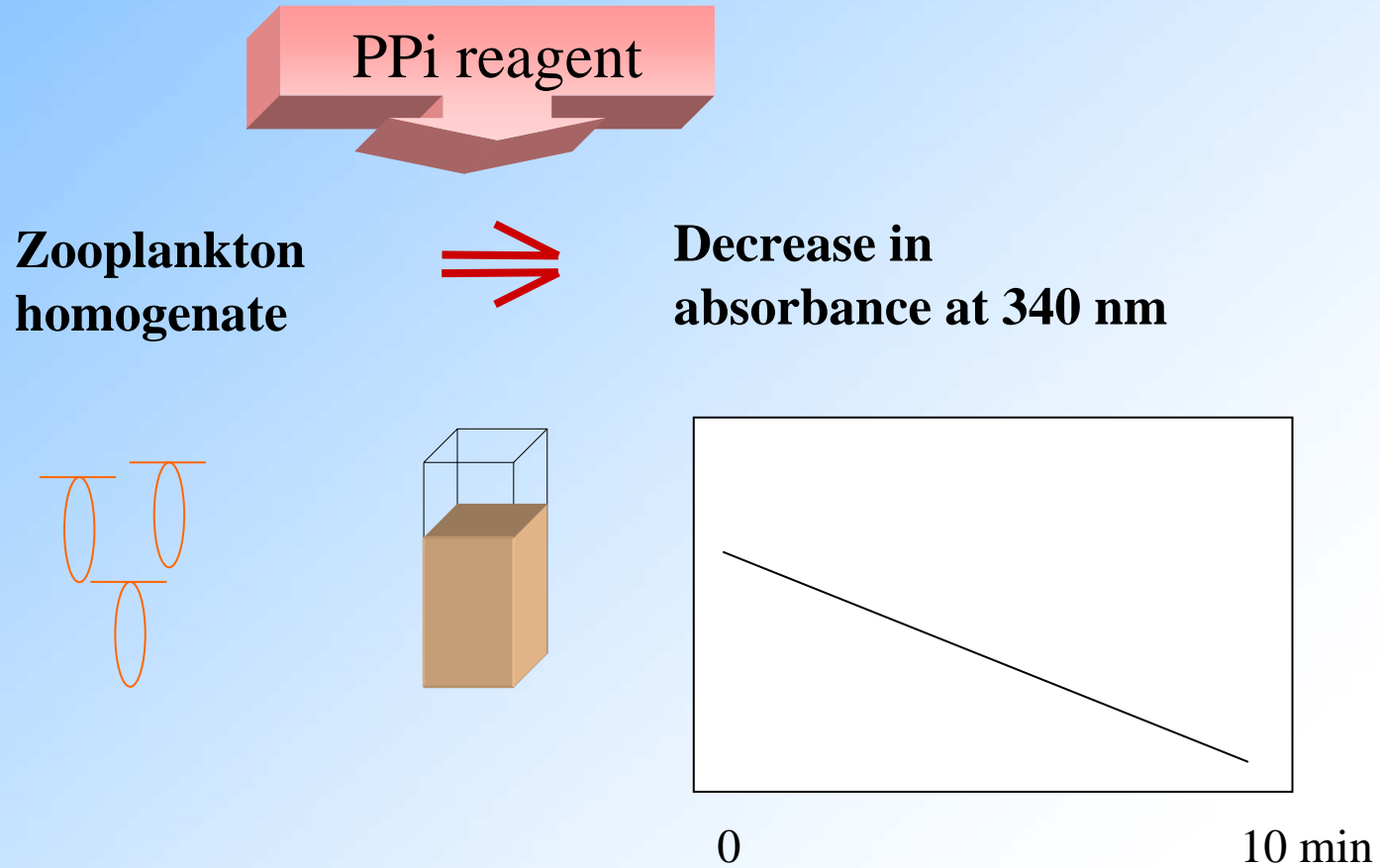
Reagent Sigma-P7275

2 NADH

2 NAD⁺

Decrease in
Absorbance
340 nm

AARS assay



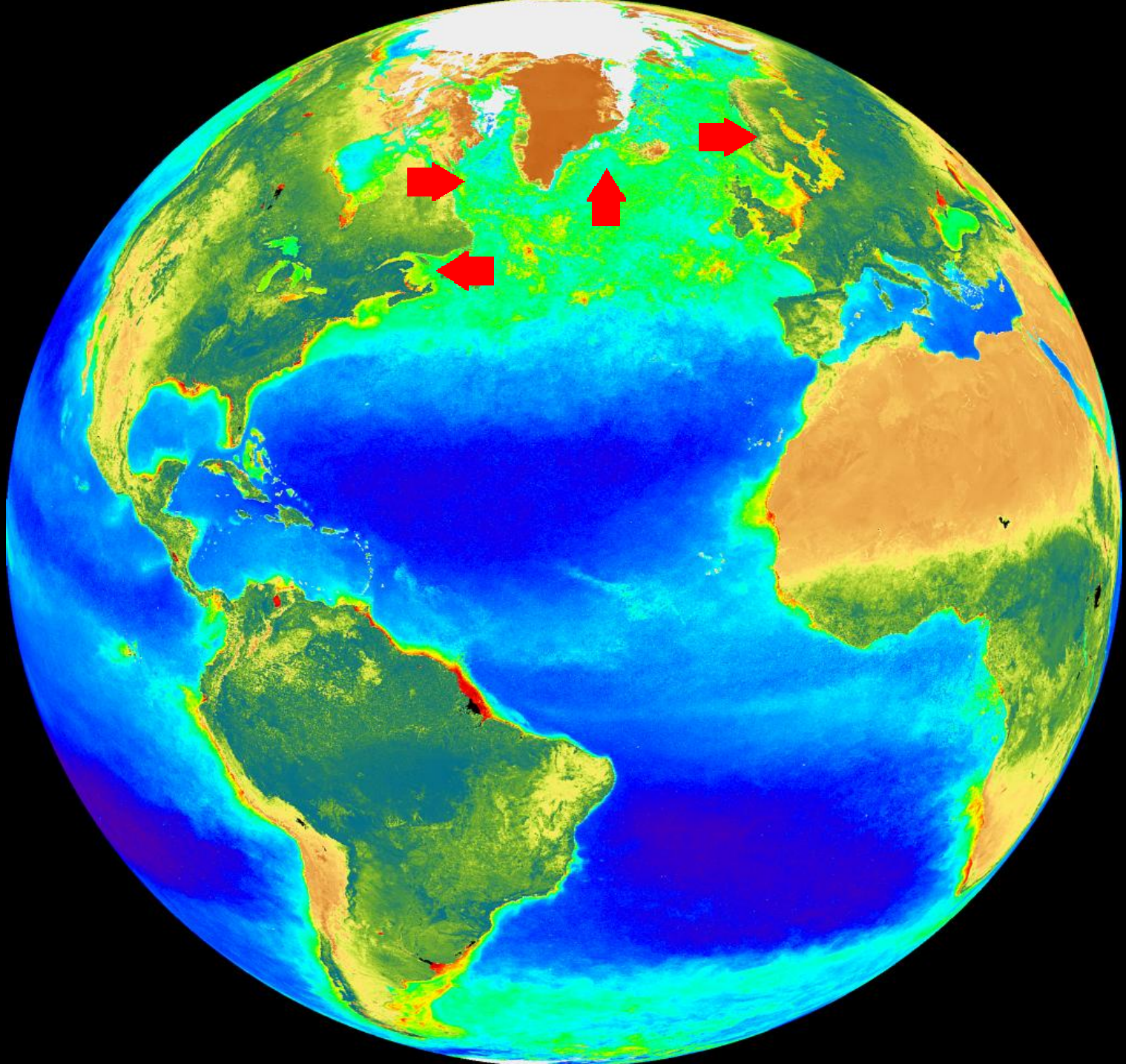
Advantages

- AARS activity can be assessed without incubating organisms
- Growth can be estimated between and within stages, moulting is not required
- The AARS method has been successfully calibrated as growth index for *Calanus helgolandicus* copepodites and adults
(Yebra et al., 2005, Mar. Biol.)

Calanus finmarchicus



Jean Francois St-Pierre

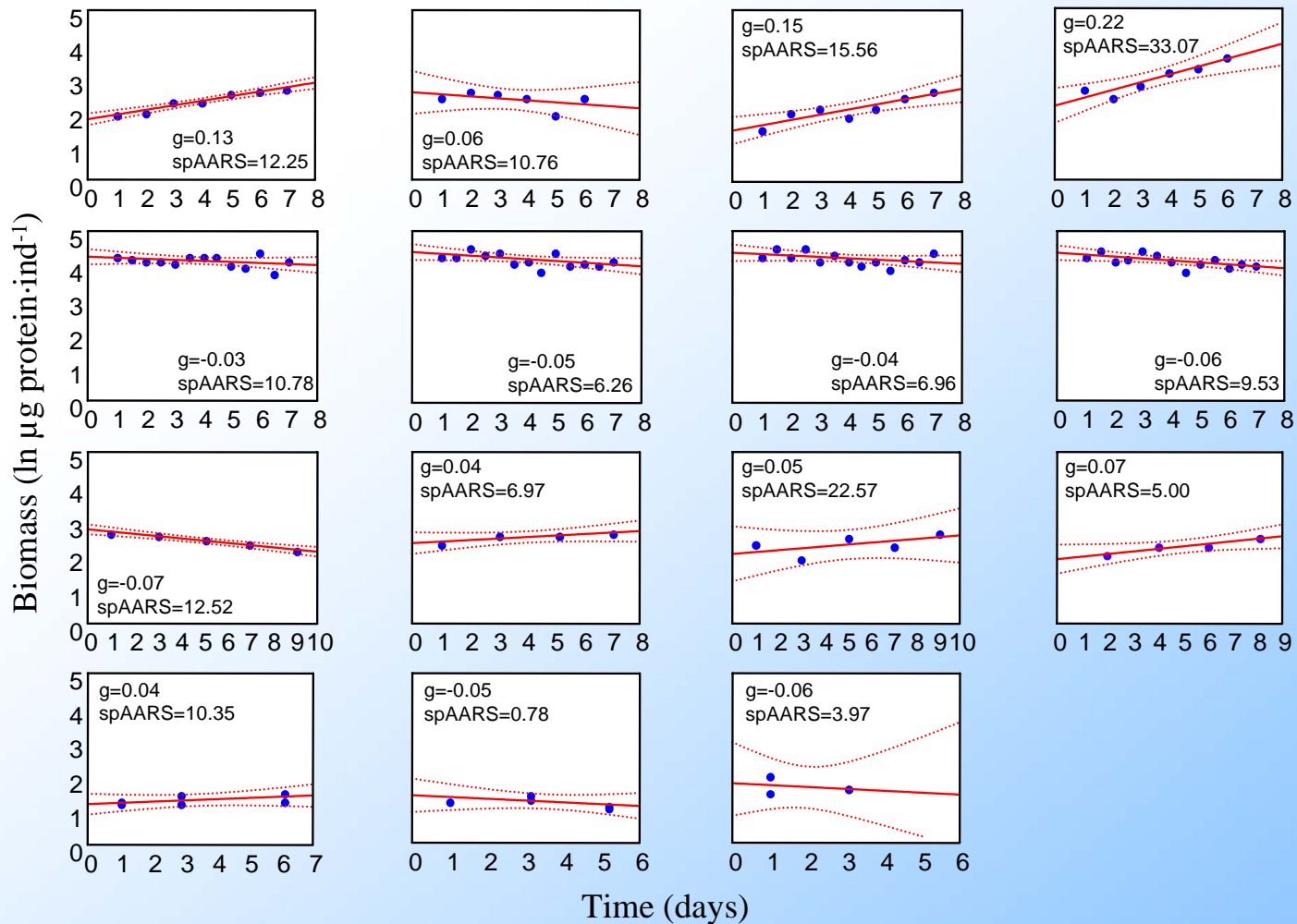


Growth and AARS activity

Location and differential characteristics of each experiment set.

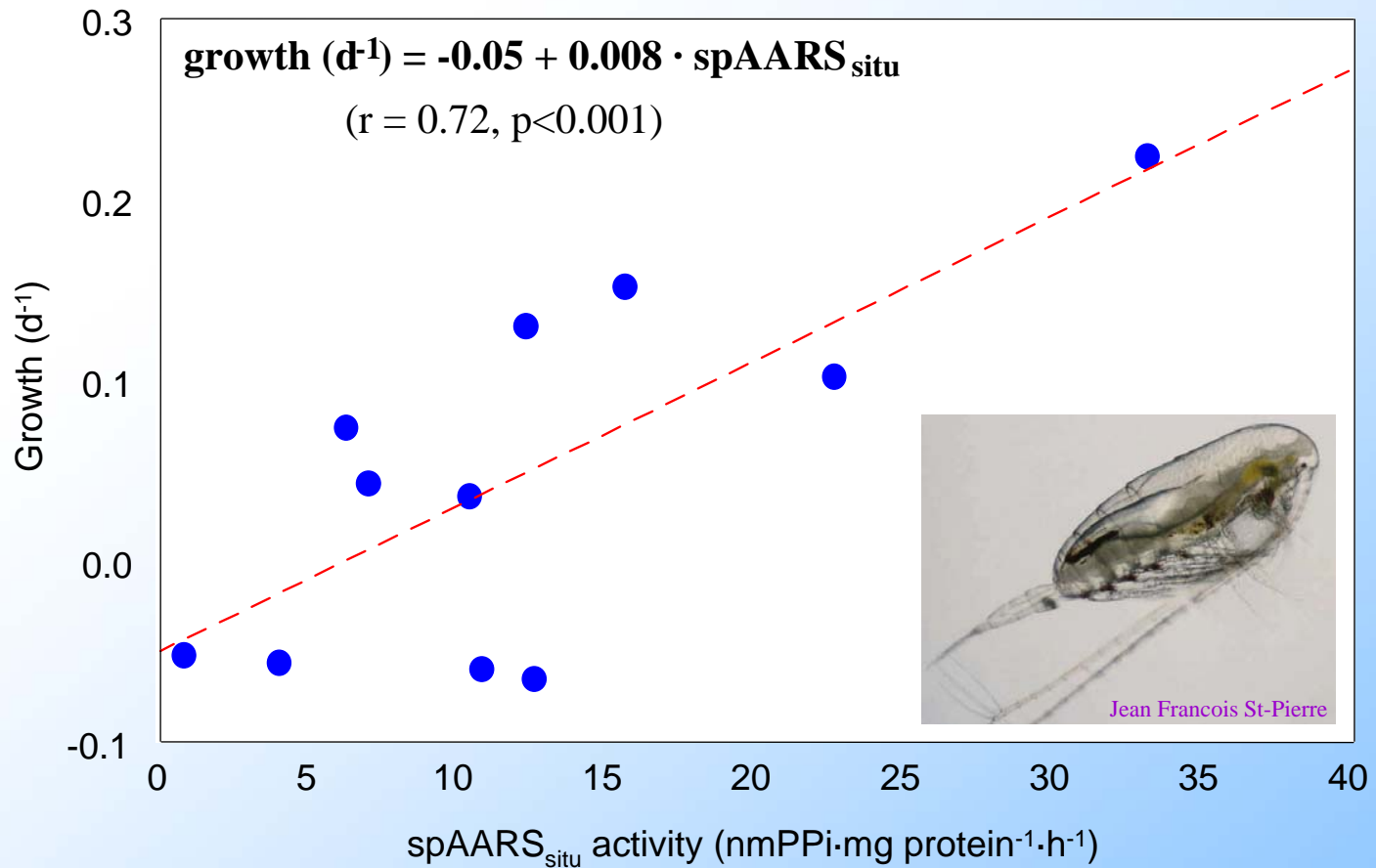
	Espeland Station	St Lawrence	Irminger Sea	Labrador Sea
Sampling location	60°24'N, 05°18' E	48° N, 66° W	58-65° N, 22-42° W	42-44° N, 60-65° W
Experiment location	Espeland Laboratory	IML Laboratory	RRV Discovery	CCGS Hudson
Date	May 1998	August 2000	August 2002	May 2004
Stages	CIV-CVI	CV	CIV-CV	CI-CIII
Cultures T°C	8	8	5, 9	0-4
Food type	<i>Rhodomonas baltica</i>	<i>Rhodomonas baltica</i>	Natural food	Natural food
Food concentration	100-800 µgC/L	0-800 µgC/L	Field conc.	Field conc.

Growth and AARS activity

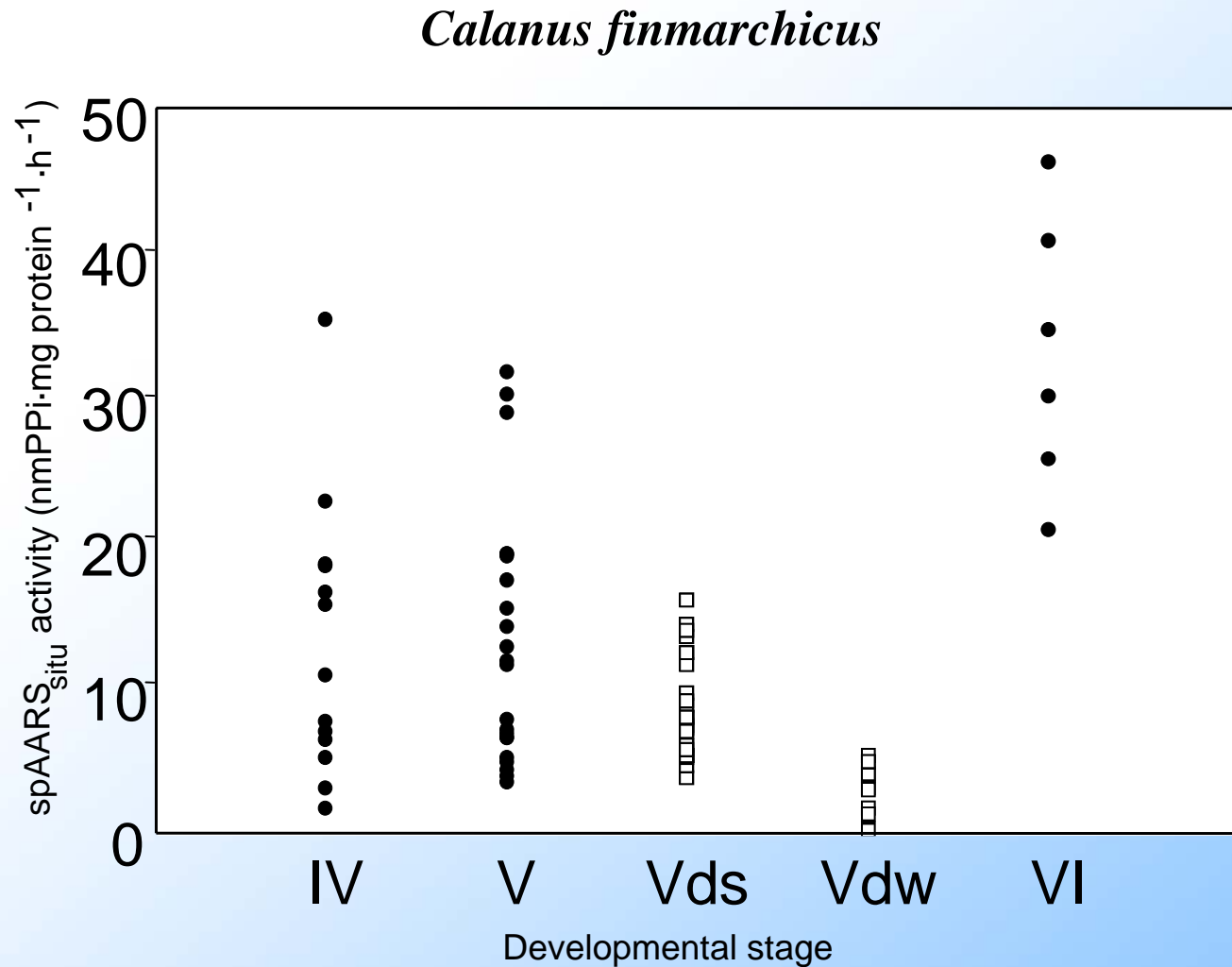


Growth and AARS activity

Calanus finmarchicus

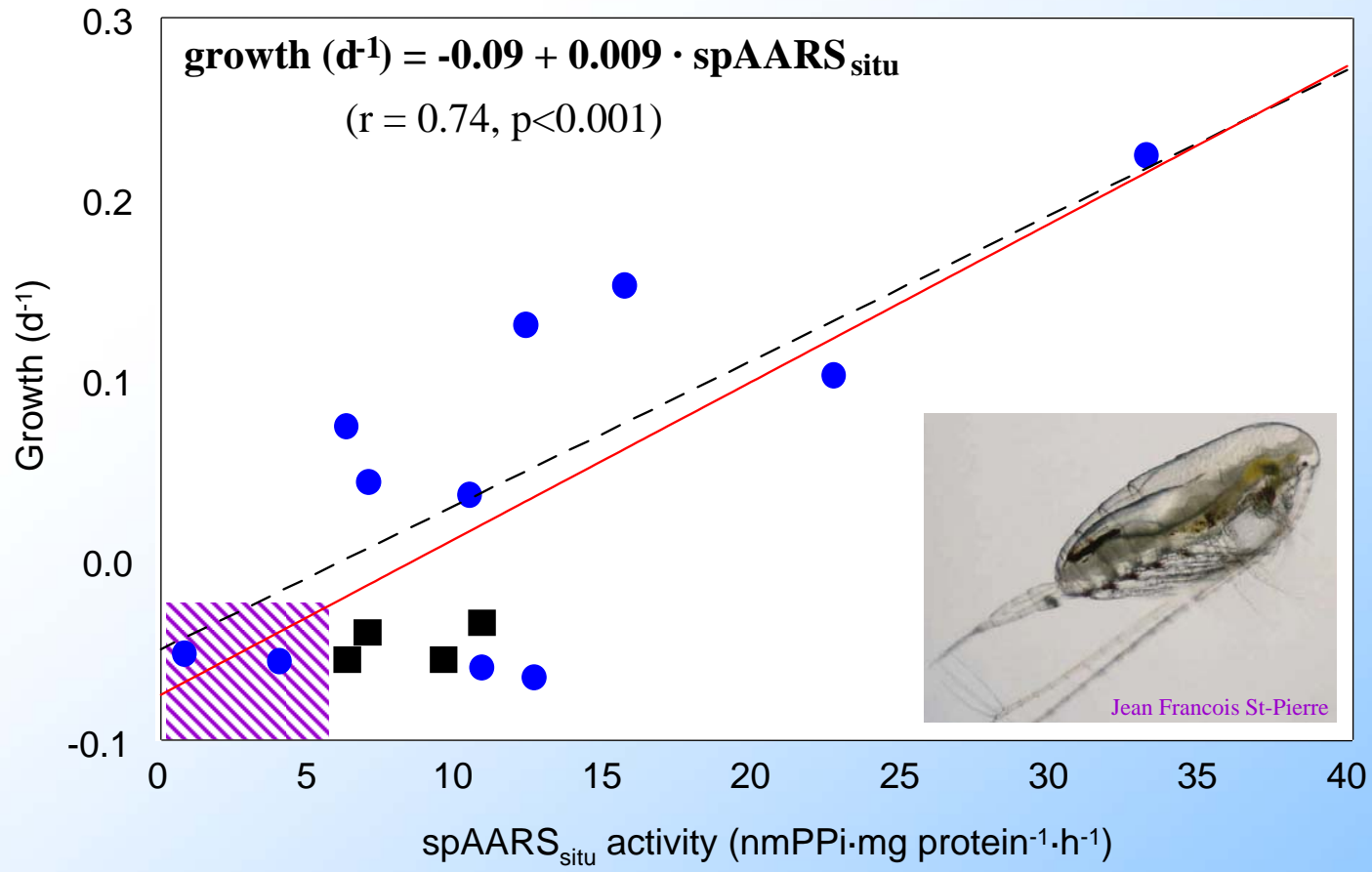


Dormancy and AARS activity



Dormancy and AARS activity

Calanus finmarchicus



Summary

- The AARS method is a suitable index of *Calanus finmarchicus* somatic growth across the North Atlantic ocean
- AARS activity can be successfully assayed on overwintering organisms
- The AARS method opens the possibility to study protein metabolism of deep sea *Calanus* populations

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More info:

Yebra, Hirst and Hernández-León (2006) *J. Plankton Res.* 28(12): 1191-1198