

# Exploring Industry Opportunities

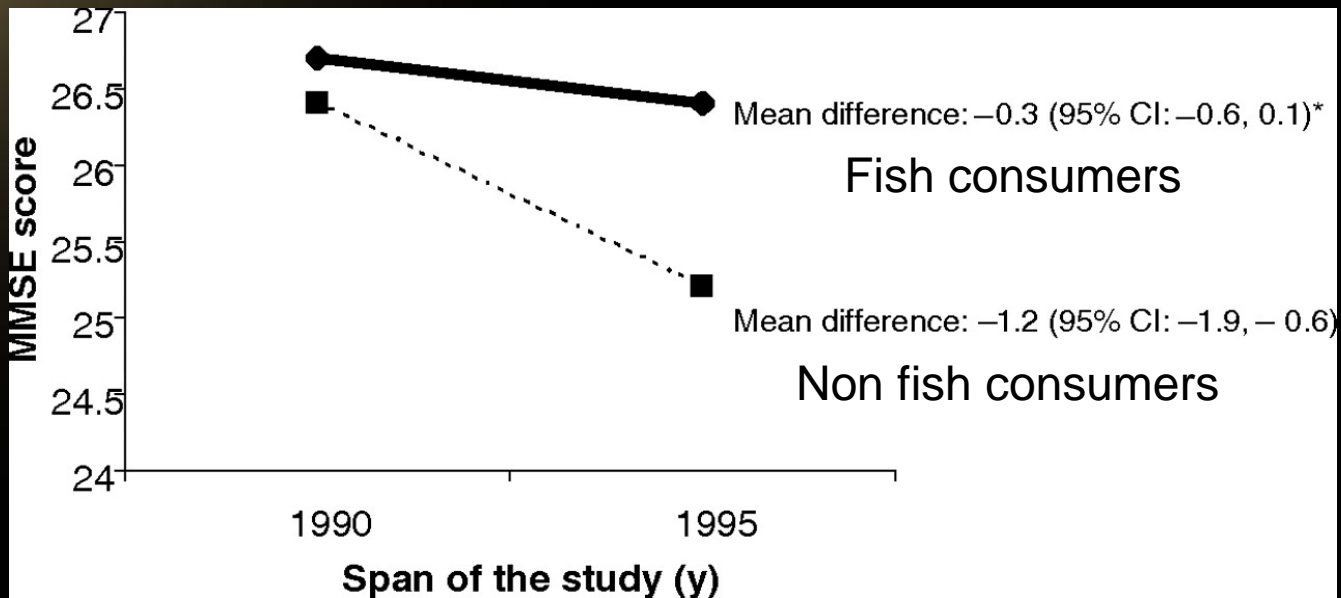
## Enriching the Diets of Retirement Community Residents with Functional Foods: An Omega Example

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# ACT

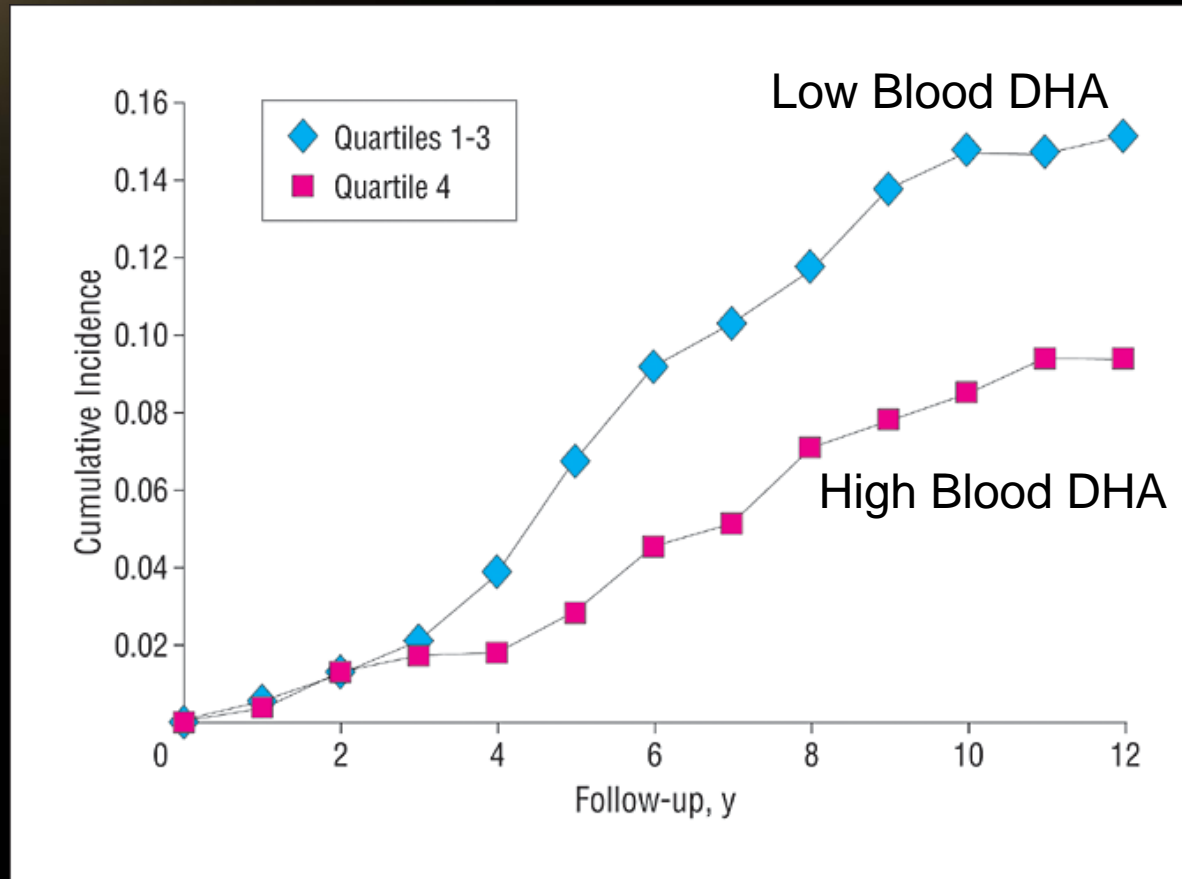
- Assess
  - Need for nutrient
  - Intake of nutrient
  - Existing foods
- Create
  - Novel food
    - Select regularly consumed food
    - Food matrix suitable for enrichment
- Test
  - Deliverable dose of nutrient
  - Palatability of the food
  - Intervention in population

# Fish Consumption is Associated with Less Cognitive Decline over 5 years in Elderly Men



van Gelder, B. M. et al. Am J Clin Nutr 2007;85:1142-1147

# Dementia Incidence is Lower with Increased Blood DHA



Schaefer, E. J. et al. Arch Neurol 2006;63:1545-1550.

# Omega-3 Intakes in An Aged Population

## Direct quantitation of omega-3 fatty acid intake of Canadian residents of a long-term care facility

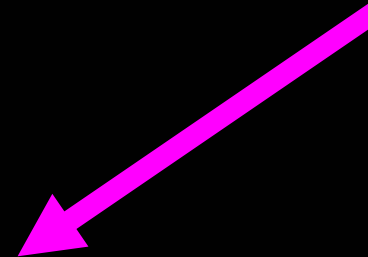
Jennifer A. Fratesi, Ryan C. Hogg, Genevieve S. Young-Newton, Ashley C. Patterson, Payman Charkhzarin, Karin Block Thomas, Michael T. Sharratt, and Ken D. Stark

**Abstract:** An increased dietary intake of *n*-3 highly unsaturated fatty acids (HUFA;  $\geq 20$  carbons,  $\geq 3$  carbon-carbon double bonds), particularly eicosapentaenoic acid (EPA; 20:5 $\omega$ -3) and docosahexaenoic acid (DHA; 22:6 $\omega$ -3), is associated with the decreased risk and incidence of several morbidities afflicting the elderly, including cognitive decline, dementia, rheumatoid arthritis, and macular degeneration. In this study, the dietary intake and blood levels of fatty acids were directly determined in residents of a retirement home or assisted living phase of a continuum of care facility for Canadian seniors. Finger-tip-prick blood samples, 3-day food duplicates, and 3-day food records were collected. The fatty acid composition of food duplicates and blood was determined by gas chromatography. Fifteen participants (7 male, 8 female;  $87.1 \pm 4.8$  years of age) completed the protocol. The daily intake of EPA and DHA combined, determined directly, was 70 mg (95% CI, 41–119) or 0.036% of total energy (95% CI, 0.022–0.058). In finger-tip-prick blood, the percent of *n*-3 HUFA in total HUFA of whole blood, a biomarker of *n*-3 polyunsaturated fatty acid status, was  $28.8 \pm 5.2\%$ . Correlations between daily *n*-3 HUFA intake and *n*-3 HUFA in blood were not significant ( $r = 0.14$ ;  $n = 15$ ), but became significant after the removal of 2 participants who appeared to consume fish irregularly ( $r = 0.59$ ;  $n = 13$ ). The *n*-3 HUFA intake and corresponding *n*-3 HUFA blood levels of Canadian long-term care residents are lower than levels estimated to prevent several morbidities associated with aging.

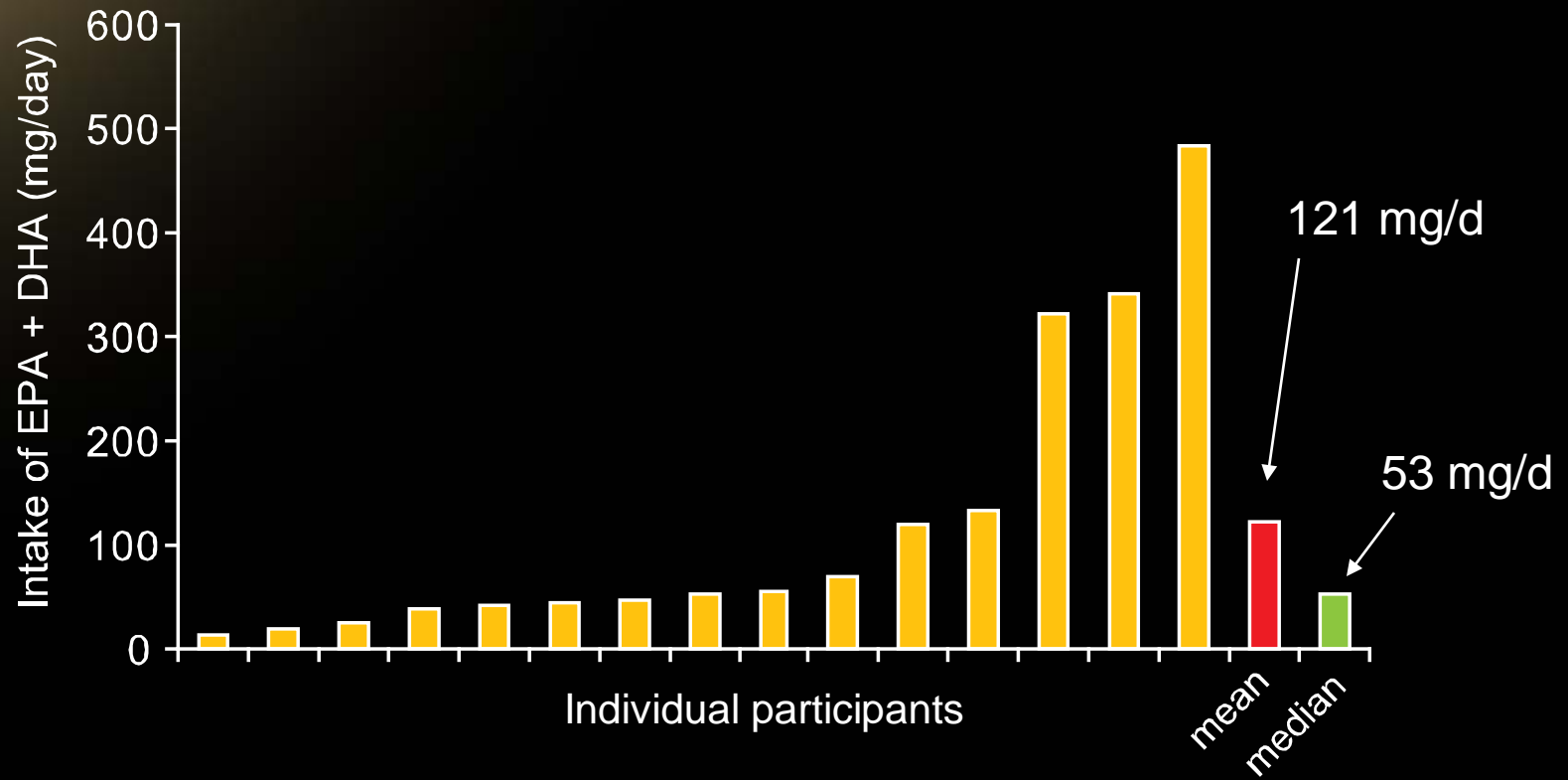
**Key words:** omega-3, docosahexaenoic acid, eicosapentaenoic acid, aging, diet, gas chromatography, fatty acid composition.

Appl. Physiol. Nutr. Metab. 34: 1-9, 2009

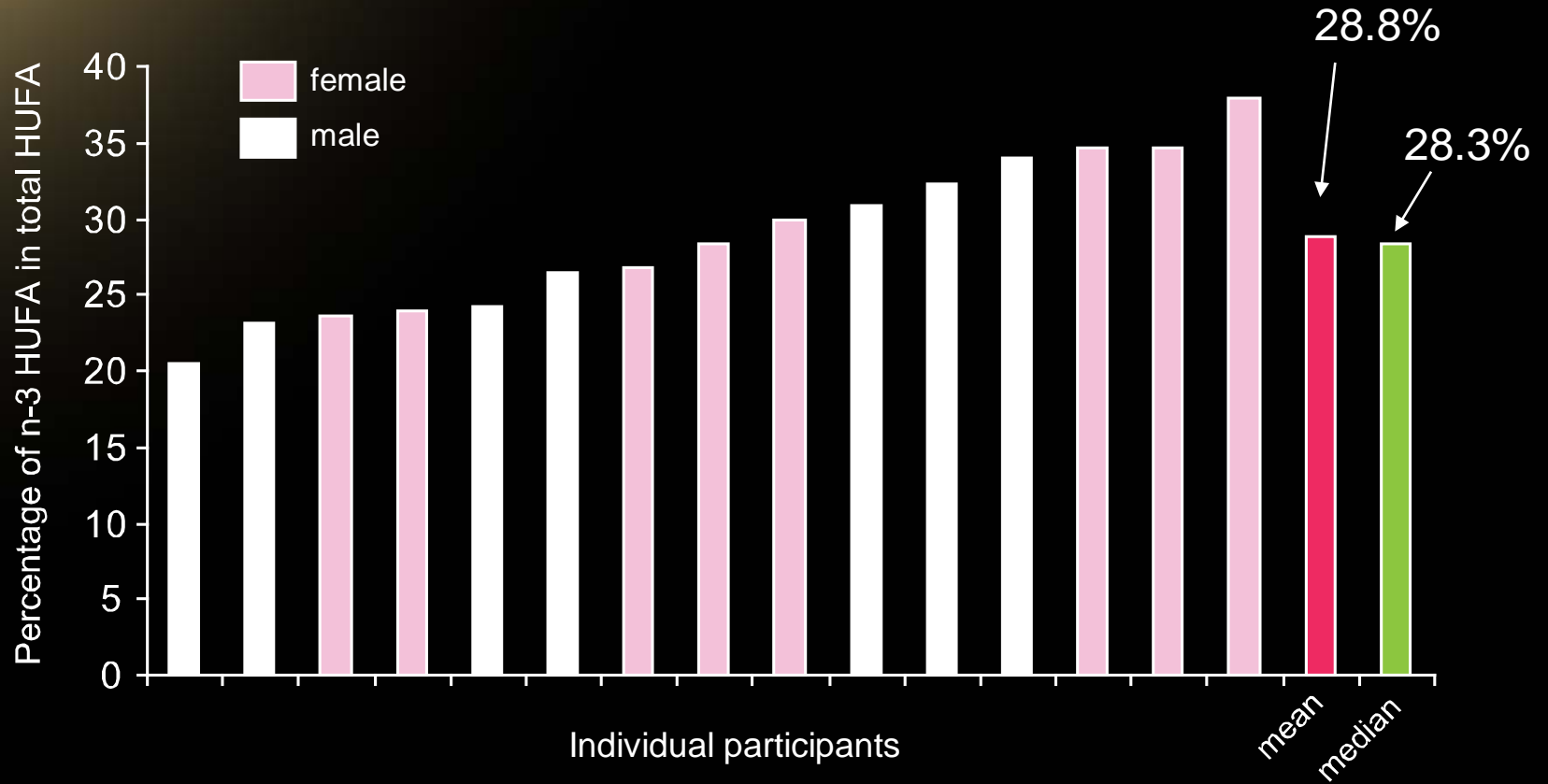
# Food Duplicate Collections



# EPA+DHA Intakes (mg)



# % of n-3 HUFA in total HUFA in Blood



# Assessing Food Menu

- Identify potential foods
  - Prepared regularly in food services rotation
  - Highly selected and consumed by residents
  - Look for an item for breakfast, lunch and supper
- Identify potential partners
  - Ocean Nutrition Canada
    - Microencapsulated fish oil powder
  - Burnbrae Farms
    - Omega-3 enriched eggs

# Create Novel Foods

- Ocean Nutrition Canada
  - Microencapsulated fish oil powder
  - Close examination of food services process
    - Mimic preparations in lab with and without FO powder
      - Oatmeal
      - Cream of mushroom soup
      - Mashed potatoes from fresh

# Testing Novel Foods

- Nutrient determinations during processing to serving point
- Palatability testing
  - Collaborate with Dr. Lisa Duizer at Guelph
    - In student population

# Next Steps

- Palatability testing
  - In target population
- Short term intervention in target population
  - Look for increases in blood levels
  - Preliminary health and safety evaluations
- Funding??