

Innovative solutions for improving vitamin D nutrition and health in Europe



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UCC

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Vitamin D deficiency is not a new problem

1862 – 1922

Vitamin in cod-liver oil prevented
& healed rickets

1650, London

Francis Glisson
published *De Rachitide*,
describing a disease that
appeared in babies
between 6 and 9 months
and progressed to a peak
at about 18 months.

He suspected a
nutritional origin and
wondered at its high
prevalence among
wealthy children.

**From 1924 on...
Widespread use of
cod-liver oil**

1930s....

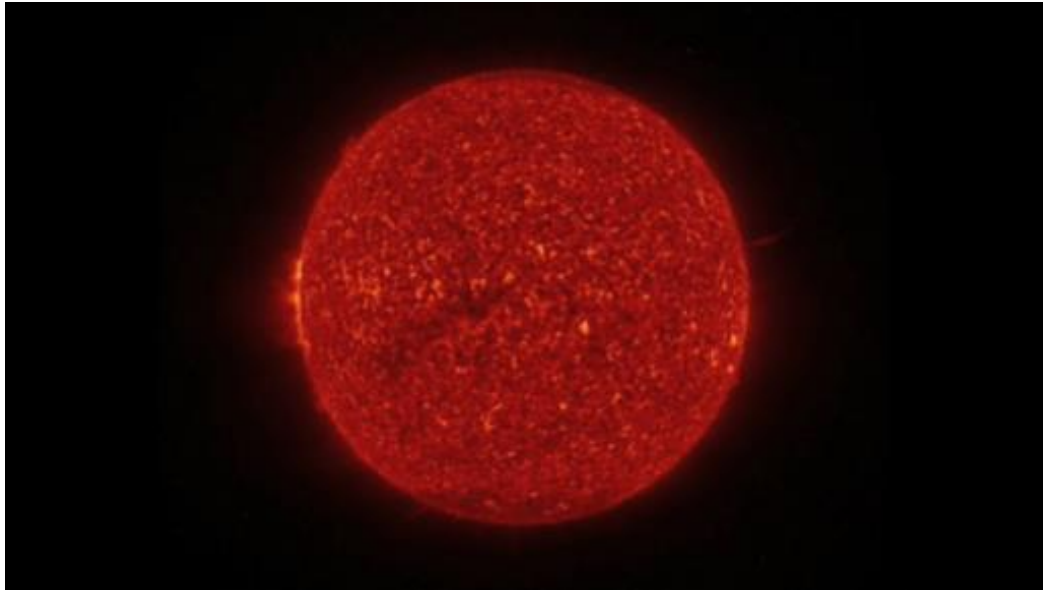
Fortification of milk
with vitamin D

1950s...

Hypercalcemia in
infants in the UK



Supply of vitamin D is limited



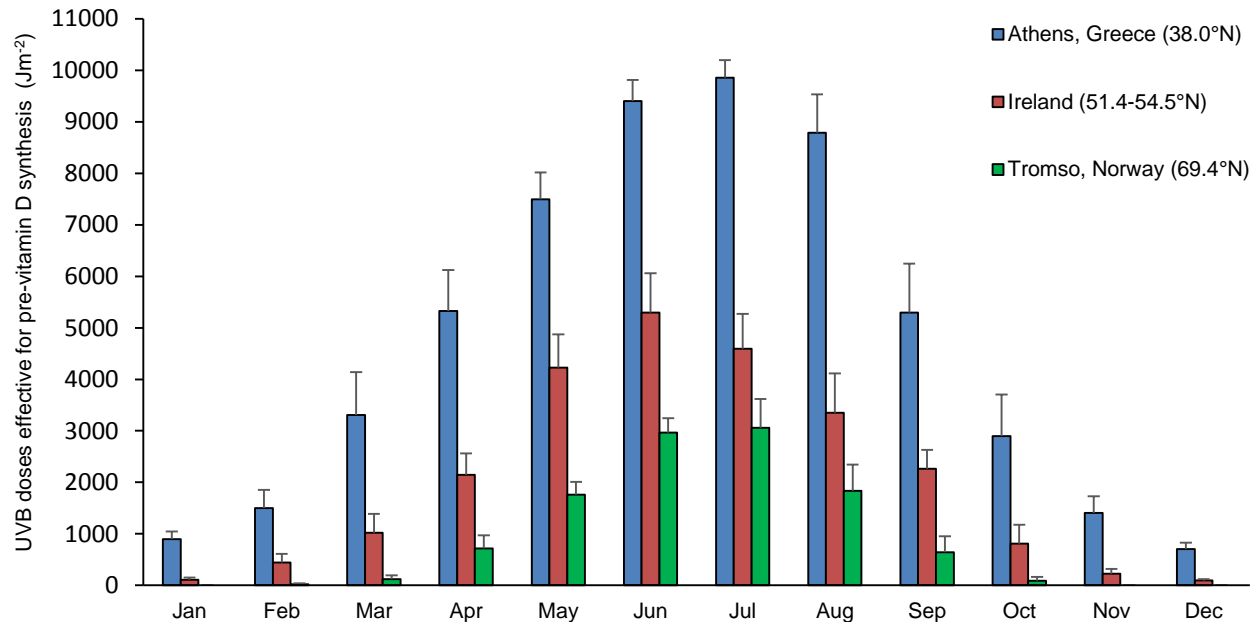


West of Ireland

in JULY!

Month-by-month availability of UVB sufficiently strong to make vitamin D in Greece, Ireland and Northern Norway

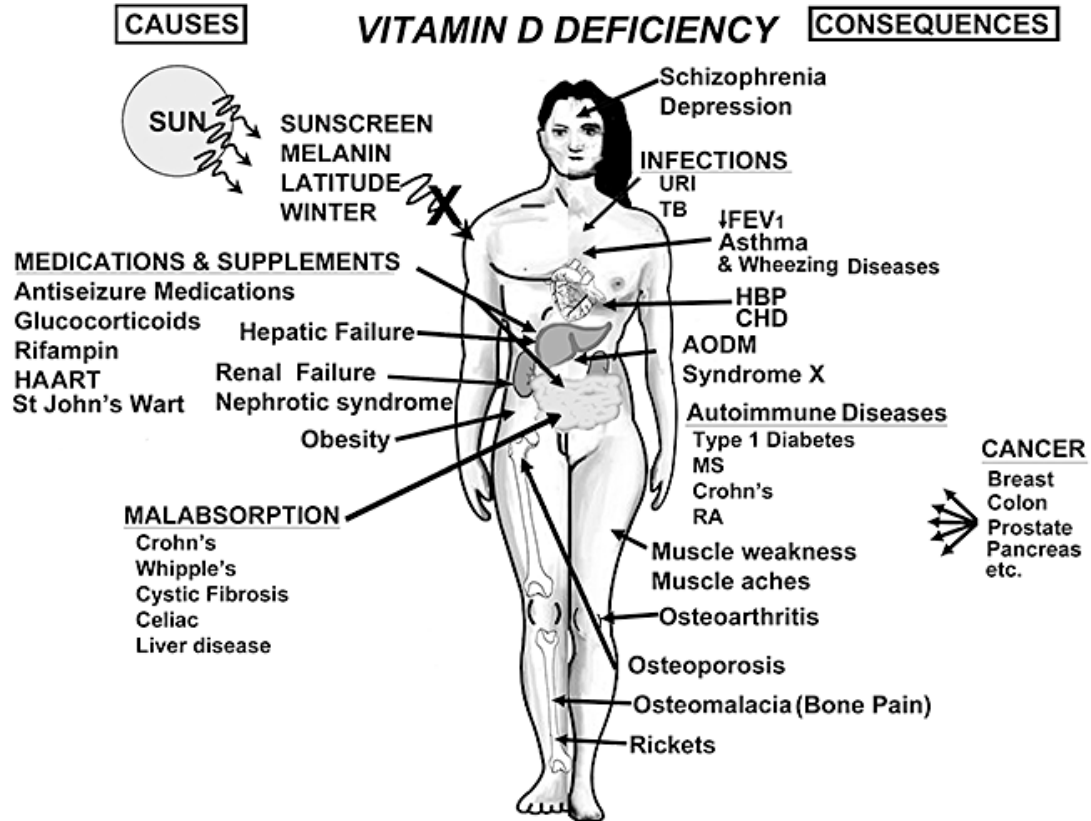
O'Neill C et al 2016





At latitudes $> \sim 40^\circ$ people rely on vitamin D intakes and body stores to maintain nutritional adequacy of vitamin D all year round
... given that body stores are largely dependent on sun exposure, vitamin D intake is a critical determinant of vitamin D status when there is sunshine deficit

Causes and potential consequences of vitamin D deficiency





- **1 in 8 (13%) Europeans have vitamin D deficiency**
High risk of vitamin D deficiency, predisposing to rickets & osteomalacia
- **2 in 5 (40%) have low vitamin D status**
Increased risk of inadequate vitamin D for maintenance of bone health



Can we solve this problem?

Well-designed sustainable fortification strategies, which use a range of foods to accommodate diversity could increase vitamin D intakes across the population and minimize the prevalence of low vitamin D status without increasing the risk of excessive intakes or toxicity

The ODIN project: Development of food-based approaches for prevention of vitamin D deficiency throughout life

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Free to download: DOI 10.1111/nbu.12159



What we are working on

WHAT'S IT ABOUT?

Project Title: Food-based solutions for optimal vitamin D nutrition and health through the life cycle
Project No.: FP7-613977-ODIN
Total budget: EURO 7.95

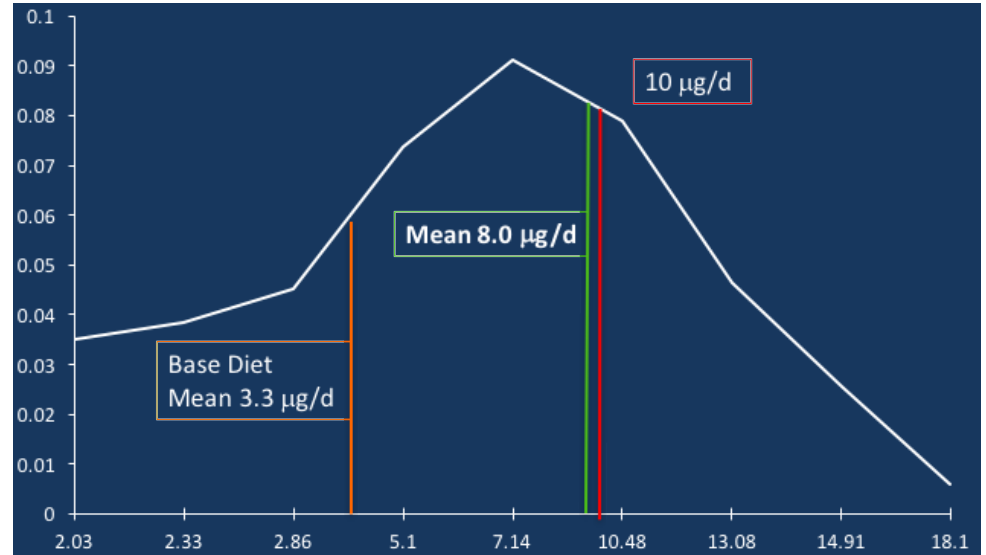


NEWS FEED

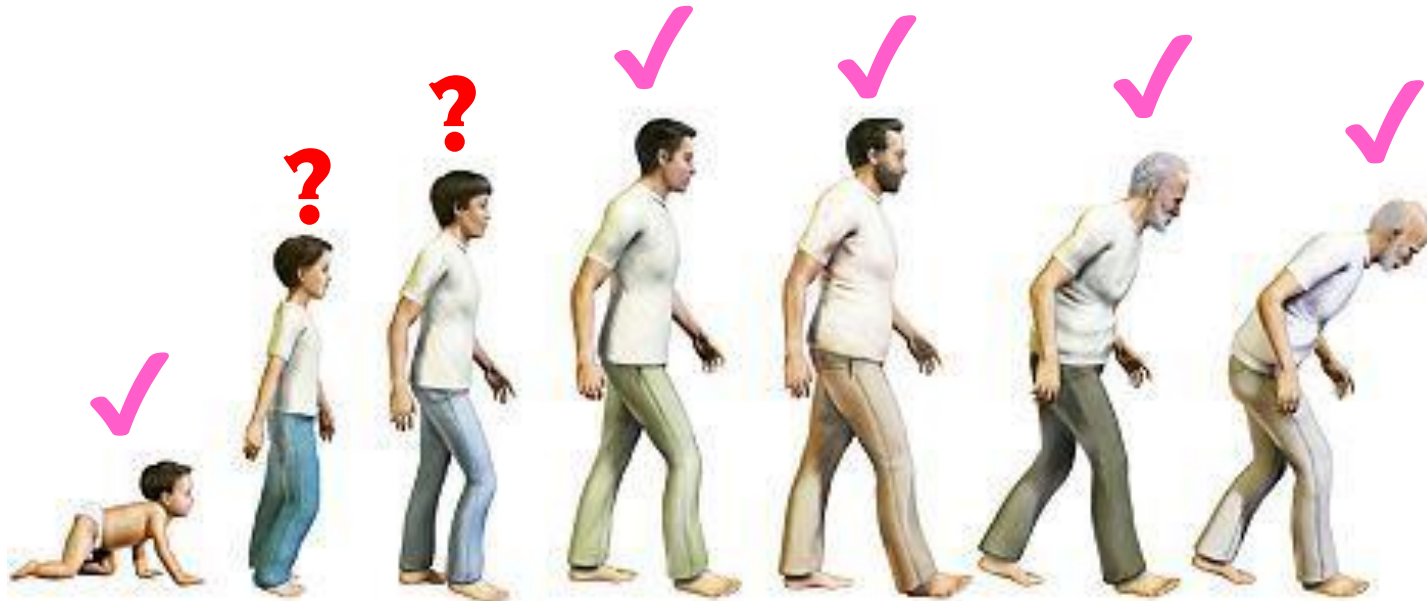
New Publication - Vitamin D Deficiency in Europe: Pandemic? 18.02.2016 12:03

The first European-wide data from the ODIN project shows that the prevalence of vitamin D deficiency, which is completely preventable through nutrition, is 13%; these first internationally comparable data present firm evidence for significant risk to public

Increasing Vitamin D in common foods



Dietary recommendations for vitamin D contain many population gaps



Dietary recommendations for vitamin D contain many gaps

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23/10/2017

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M Kiely, University College Cork

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ODIN has delivered

**Dietary requirements for
Vitamin D in White-skinned**

Children (Copenhagen)

Adolescents (Surrey)

**Pregnant women and
newborn infants (Cork)**

East African adults (Helsinki)



DMAT Study

**The DMAT study is a randomized controlled trial of vitamin D
versus placebo during pregnancy from the first trimester
through to delivery.**

At present, it is not known exactly how much vitamin D women need during pregnancy and so the current advice for pregnant women is the same as for women who are not pregnant.

This study will provide the evidence for making special recommendations for pregnant women, if they are needed.

Vitamin D and Health Outcomes

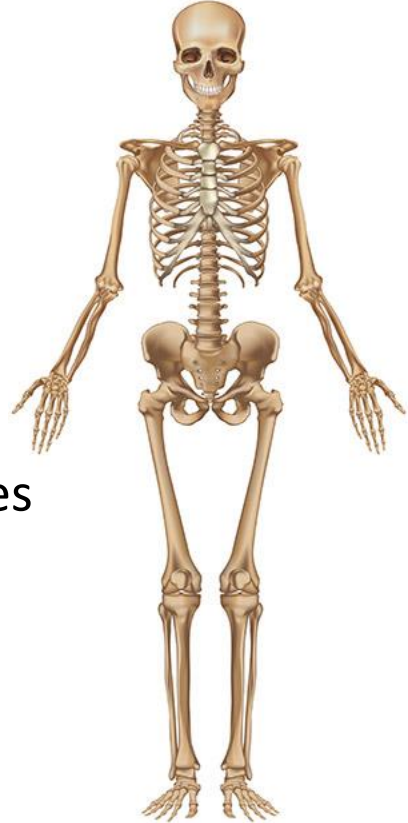
Perinatal & early life

- Pregnancy
- Infancy
- Growth in children
- Bone
- Neurological outcomes
- Immune function



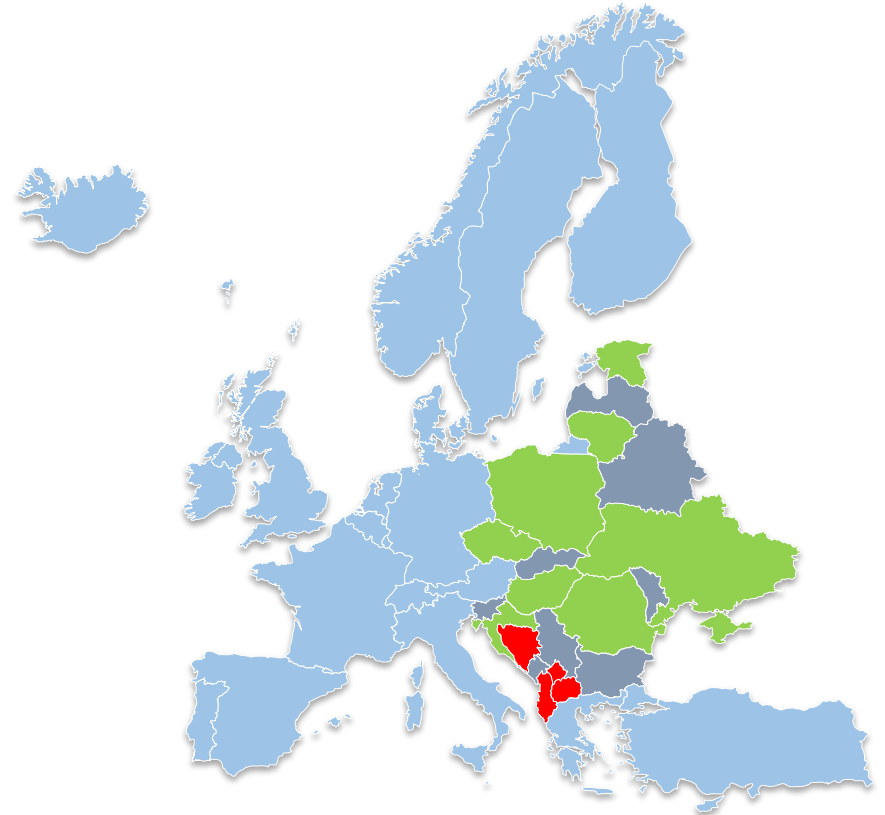
Older adults

- Mortality
- CVD
- Osteoporosis
- Cancer
- Type 2 Diabetes
- Depression



Massive outstanding gaps in knowledge

CEEC Infrastructure for
strategic nutrition
research needs
investment informed by
current best practice



People of ethnic minority are at highest risk of vitamin D deficiency (28-65%)

Urgent need for fit-for-purpose, well characterized biobanks and quality dietary surveys



Take home messages

- Sustainable, food-first approaches to increasing vitamin D intakes across the population are technically feasible, can achieve meaningful increases and prevent vitamin D deficiency without increasing the risk of excessive intakes or toxicity
- New dietary requirements for vitamin D in children, teens, pregnant women & people of East African origin
- Infrastructure to perform nutrition and health surveys of all population groups, including European residents of ethnic minority, CEEC and vulnerable subgroups are urgently required
- Nutrition-led multidisciplinary research to ensure supply of nutrients to ensure sustainable nutrition security delivers food innovation, real-world solutions and impacts on the health of all European residents



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[European vitamin D deficiency map](#)

[Vitamin D winter map](#)

Project Title: Food-based solutions for optimal vitamin D nutrition and health through the life cycle
Project No.: FP7-613977-ODIN
Total budget: EURO 7.95 million
EU Contribution: EURO 6 million

Coordinator: University College Cork, Ireland, Professor Kevin Cashman and Professor Mairead Kieley

Start: November 1, 2013
Duration: 48 months



Welcome to the ODIN website, click above to learn more about the ODIN project and the team behind ODIN.

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NEWS FEED

One-day symposium presenting new ODIN data: 24th March 2017, Brussels
09.03.2017 12:14

Join this exciting one-day symposium presenting new ODIN data on dietary requirements for vitamin D in children, adolescents, black-skinned adults and pregnant women in Europe. The event is free but space is limited. To secure a place and register email [Taryn Smith: t.j.smith@surrey.ac.uk](mailto:t.j.smith@surrey.ac.uk). Click [here](#) for more information.

ODIN publication on the link between vitamin D status and mortality
28.02.2017 10:40

New research from ODIN on the association between low vitamin D status and increased risk of all-cause mortality. To read this open access publication click [here](#).