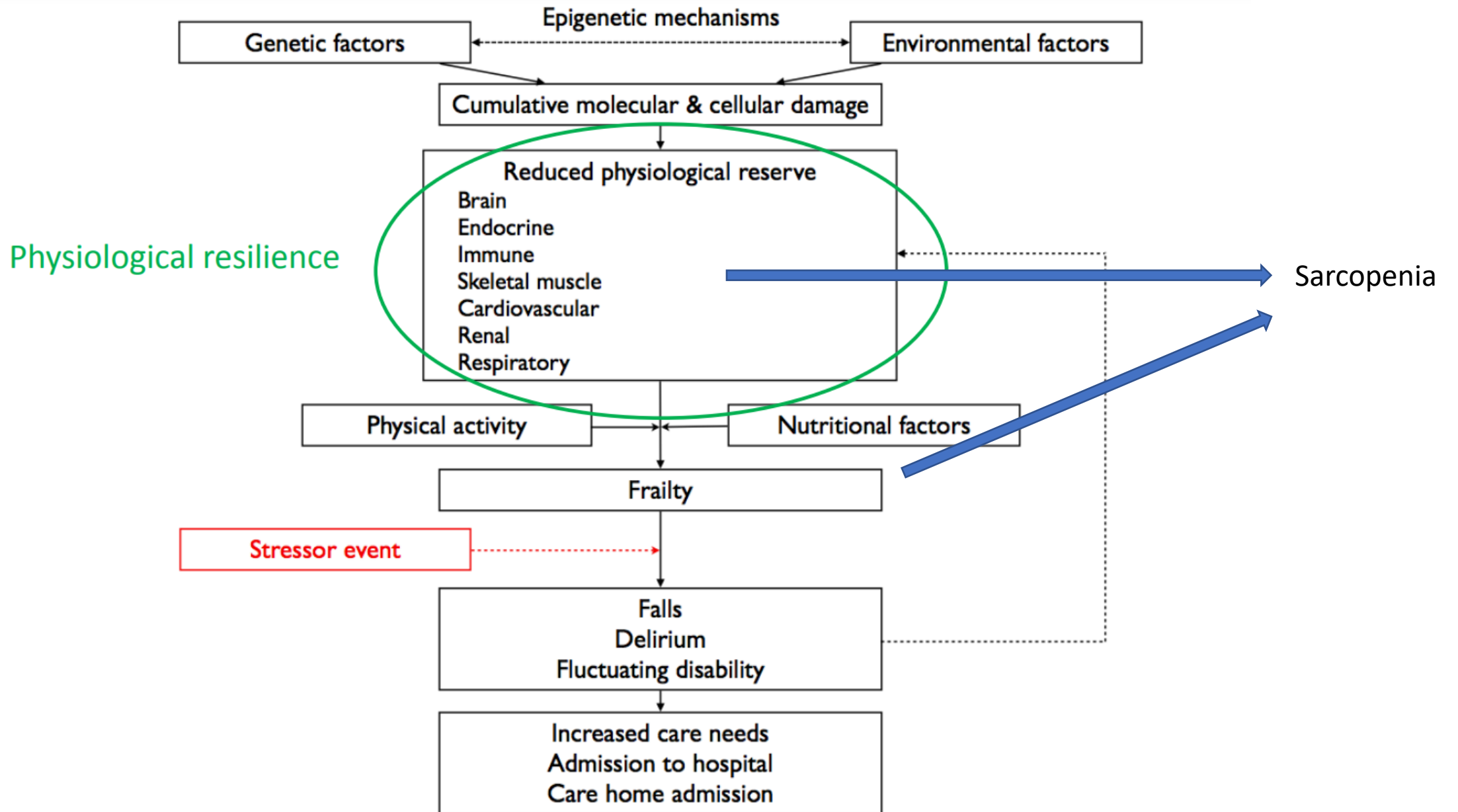


Frailty: wat is het?

Alumni Geneeskunde UGent

Anton De Spiegeleer, MD, PhD

19/04/2023



Outpatients/primary care	Acute care
Gait speed <0.8m/s	Clinical frailty scale
Timed-up-and-go test <12s	Reported Edmonton frail scale
Grip strength	ISAR tool
PRISMA 7 questionnaire	HFRS
Groningen frailty indicator	(Grip strength)
FRAIL scale	(Gait speed pre-discharge)
Clinical frailty scale	
Edmonton frail scale	
eFI	

FRAILTY QUESTIONNAIRE


For each question, please select **all** of the options that apply to you.

Two weeks **BEFORE** your current illness...


Q1. Did you need help with any of the following personal care?



Using the toilet



Getting dressed




Bathing/Showering




Walking

**Stop here if you have selected any of the options above.*


Q2. Did you need help with any of the following activities?



Going outside




Handling Money




Taking Medications

**Stop here if you have selected any of the options above.*

Q3. Did you feel constantly tired throughout the day?




Yes




No

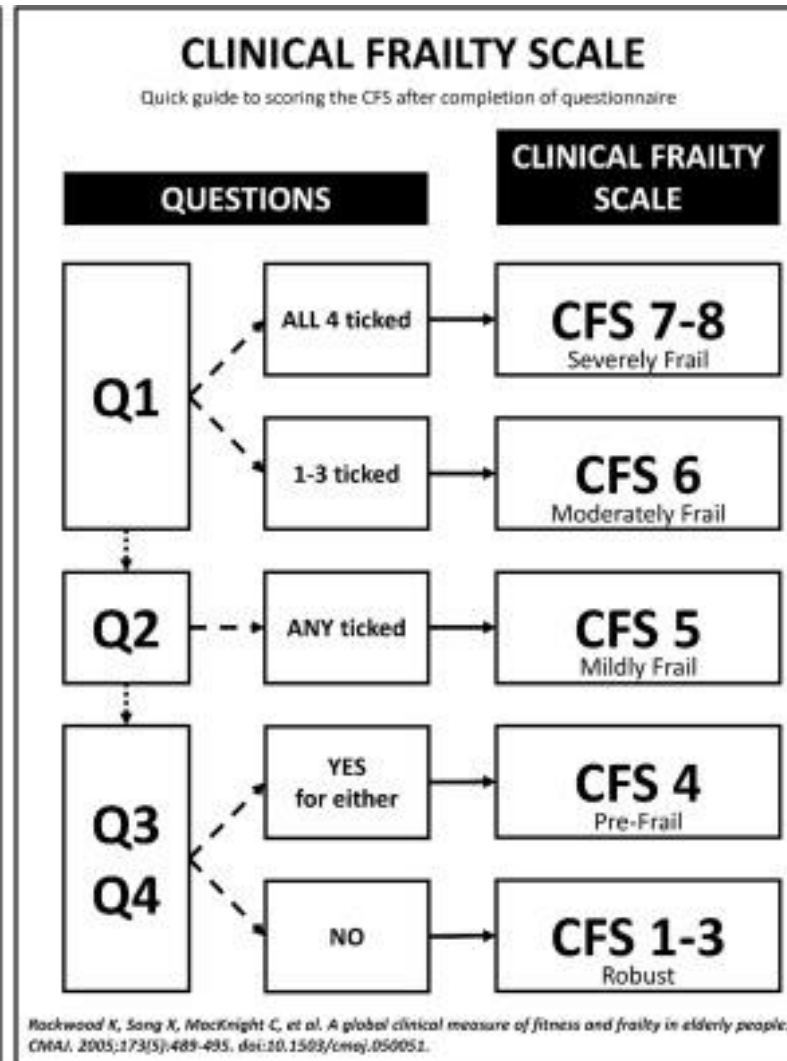
Q4. Did you feel that you were walking slower than usual?



Yes



No



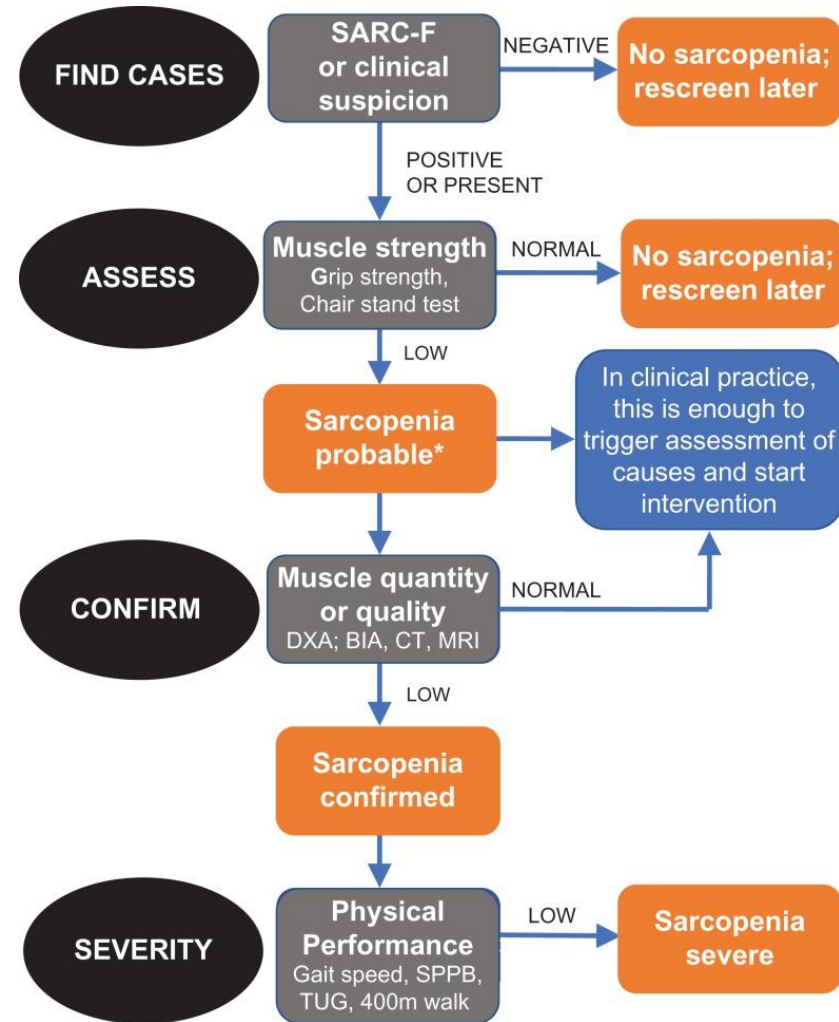
Casus:

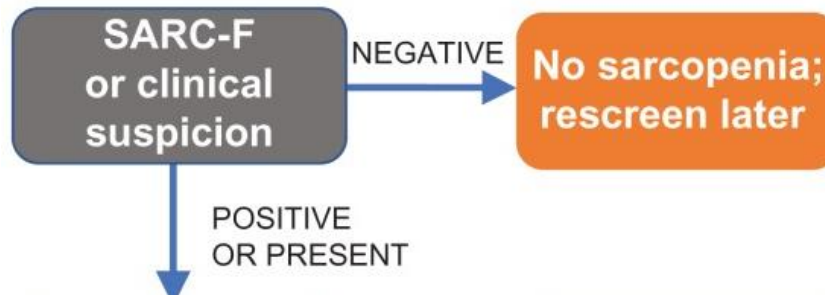
Jeanine (82j)

- RVO: accidentele val thuis met trauma capitis zonder fracturen
- VG: verminderde eetlust sinds enkele jaren (45kg). Gerookt. Osteoporose.
- Sociaal: thuiswonend met echtgenoot. Huis met trappen, maar leven op de gelijkvloers. Poets en huishoudhulp.



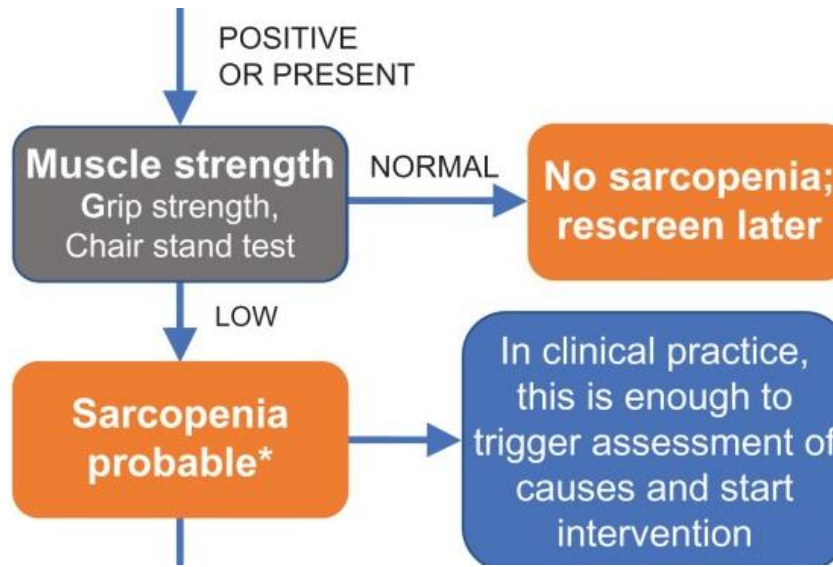
Frailty – Sarcopenia – Resilience – Microbiota





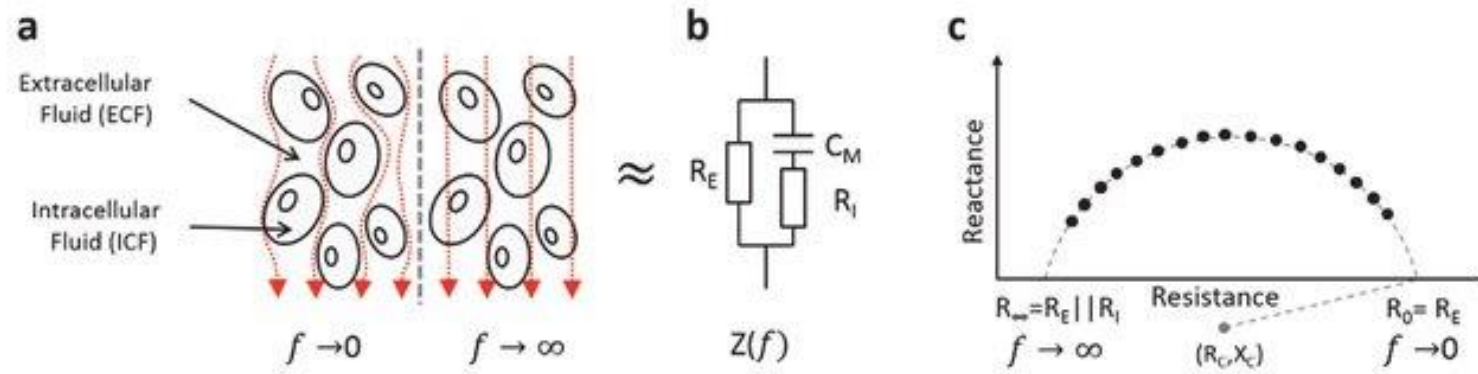
Component	Vraag	Score
Kracht	Hoeveel moeite heeft u met het optillen en dragen van 5kg?	Geen = 0
		Enige = 1
		Veel of lukt niet = 2
Hulp bij het lopen	Hoeveel moeite heeft u met het lopen door een kamer?	Geen = 0
		Enige = 1
		Veel, met hulpmiddel, of lukt niet = 2
Opstaan uit een stoel	Hoeveel moeite heeft u met het opstaan uit een stoel of bed?	Geen = 0
		Enige = 1
		Veel of lukt niet = 2
Traplopen	Hoeveel moeite heeft u met het omhoog lopen van 10 treden	Geen = 0
		Enige = 1
		Veel of lukt niet = 2
Vallen	Hoeveel keer bent u gevallen in het afgelopen jaar?	Geen = 0
		Enige = 1
		Veel = 2
Totaalscore (score >= 4: hoog risico op sarcopenie) =		7

1) Spierkracht



Test	Cut-off points for men	Cut-off points for women	References
EWGSOP2 sarcopenia cut-off points for low strength by chair stand and grip strength			
Grip strength	<27 kg	<16 kg	9,7 Dodds (2014) [26]
Chair stand	>15 s for five rises	65,3	Cesari (2009) [67]

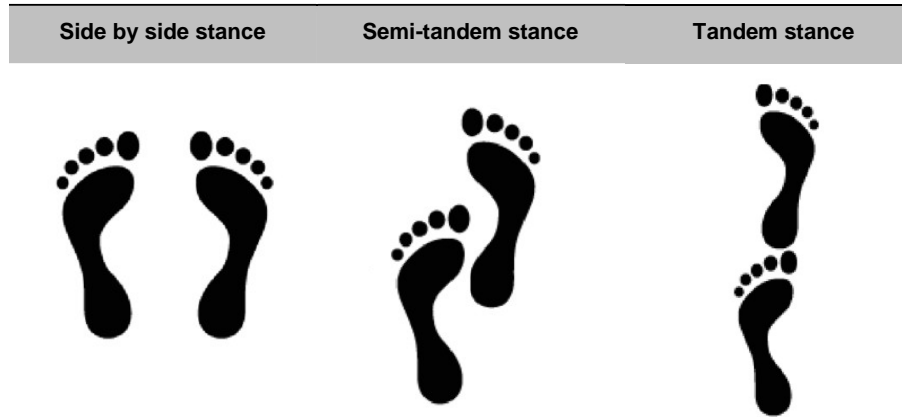
2) Spiermassa



3) Fysieke functie

SPPB:

- Balans



- 3MWT



- 5TSTS

(TUG + Tinetti)



Balans (Indien de patiënt 10 seconden met zijn/haar voeten naast elkaar en tegen elkaar aan kan staan, krijgt deze 1 punt en wordt de volgende positie getest. Indien de eerste test niet mogelijk is krijgt de patiënt een score 0 en kunnen de andere balanstesten worden overgeslagen).

Voeten tegen elkaar	1
Semi-tandemstand	0
Tandemstand (3-9s=1pnt; >9s=2pntn)	0

3 meter wandeltest (“stap zoals je thuis zou stappen” loophulpmiddel toegestaan)

Poging 1	2	<table border="1"> <thead> <tr> <th>Seconden</th> <th>Afkappunten</th> </tr> </thead> <tbody> <tr> <td>< 3.62</td> <td>4</td> </tr> <tr> <td>3.62-4.65</td> <td>3</td> </tr> <tr> <td>4.66-6.52</td> <td>2</td> </tr> <tr> <td>6.52</td> <td>1</td> </tr> <tr> <td>Niet in staat</td> <td>0</td> </tr> </tbody> </table>		Seconden	Afkappunten	< 3.62	4	3.62-4.65	3	4.66-6.52	2	6.52	1	Niet in staat	0
Seconden		Afkappunten													
< 3.62	4														
3.62-4.65	3														
4.66-6.52	2														
6.52	1														
Niet in staat	0														
Poging 2															

0,48 m/s

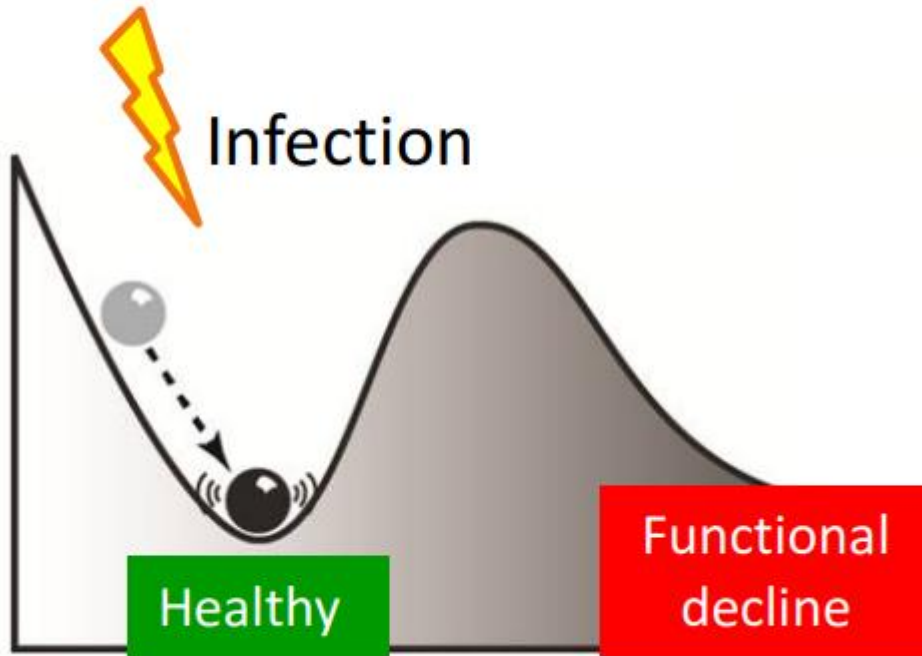
5x opstaan uit een stoel met handen voor de borst: 5^e keer dat de pt rechtop staat wordt de tijd gestopt.

Poging 1	0	<table border="1"> <thead> <tr> <th>Seconden</th> <th>Afkappunten</th> </tr> </thead> <tbody> <tr> <td>< 11.20</td> <td>4</td> </tr> <tr> <td>11.20-13.69</td> <td>3</td> </tr> <tr> <td>13.70-16.69</td> <td>2</td> </tr> <tr> <td>16.7-60</td> <td>1</td> </tr> <tr> <td>> 60 sec of niet in staat</td> <td>0</td> </tr> </tbody> </table>		Seconden	Afkappunten	< 11.20	4	11.20-13.69	3	13.70-16.69	2	16.7-60	1	> 60 sec of niet in staat	0
Seconden		Afkappunten													
< 11.20		4													
11.20-13.69		3													
13.70-16.69		2													
16.7-60		1													
> 60 sec of niet in staat	0														

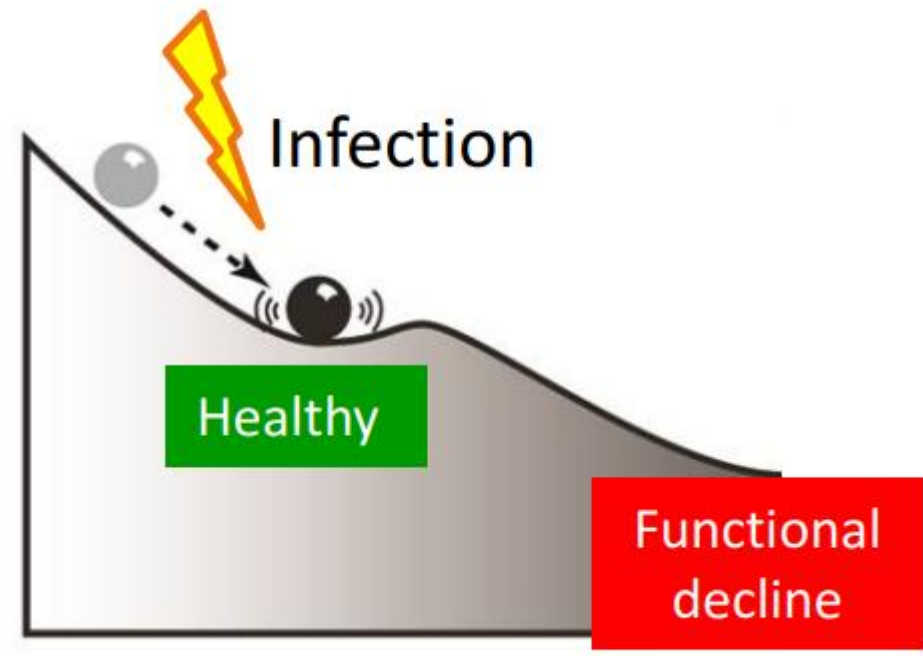
Totaalscore = 3

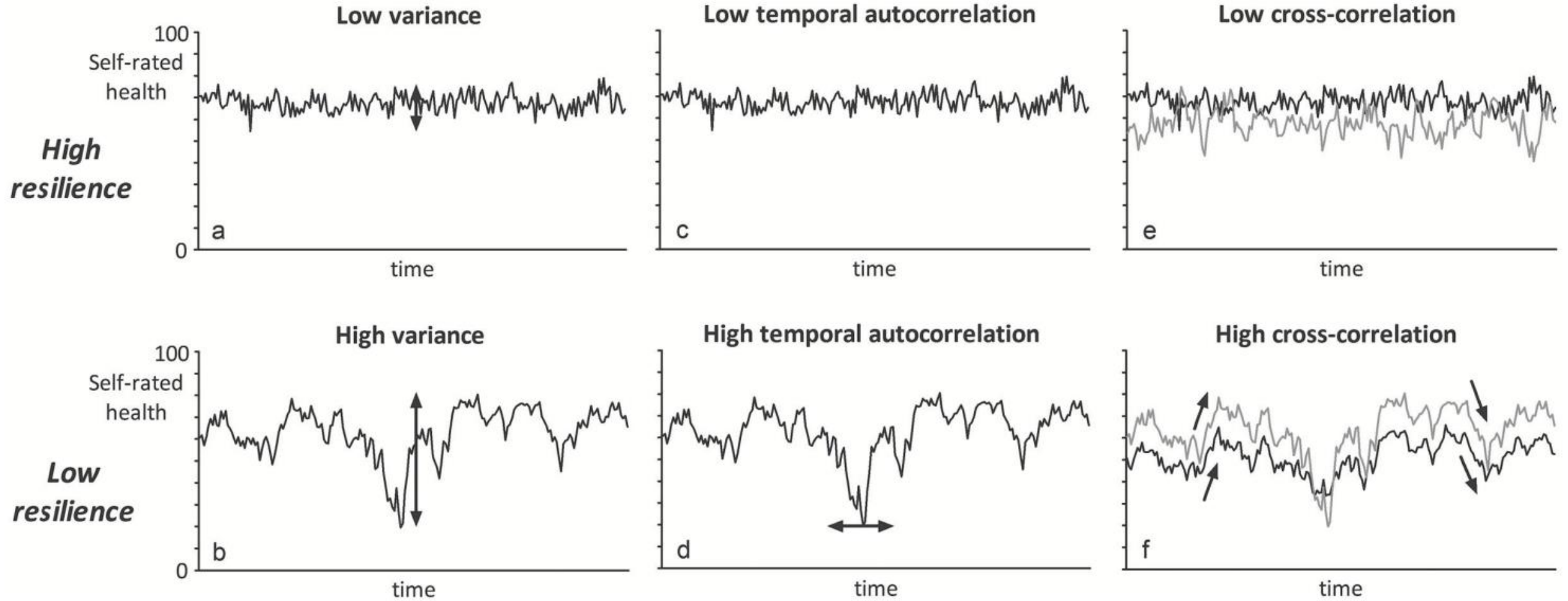
Test	Cut-off points for men	Cut-off points for women	References
EWGSOP2 sarcopenia cut-off points for low performance			
Gait speed	≤0.8 m/s		Cruz-Jentoft (2010) [1] Studenski (2011) [84]
SPPB		≤8 point score	Pavasini (2016) [90] Guralnik (1995) [126]
TUG		≥20 s	Bischoff (2003) [127]
400 m walk test	Non-completion or ≥6 min for completion		Newman (2006) [128]

High resilience



Low resilience



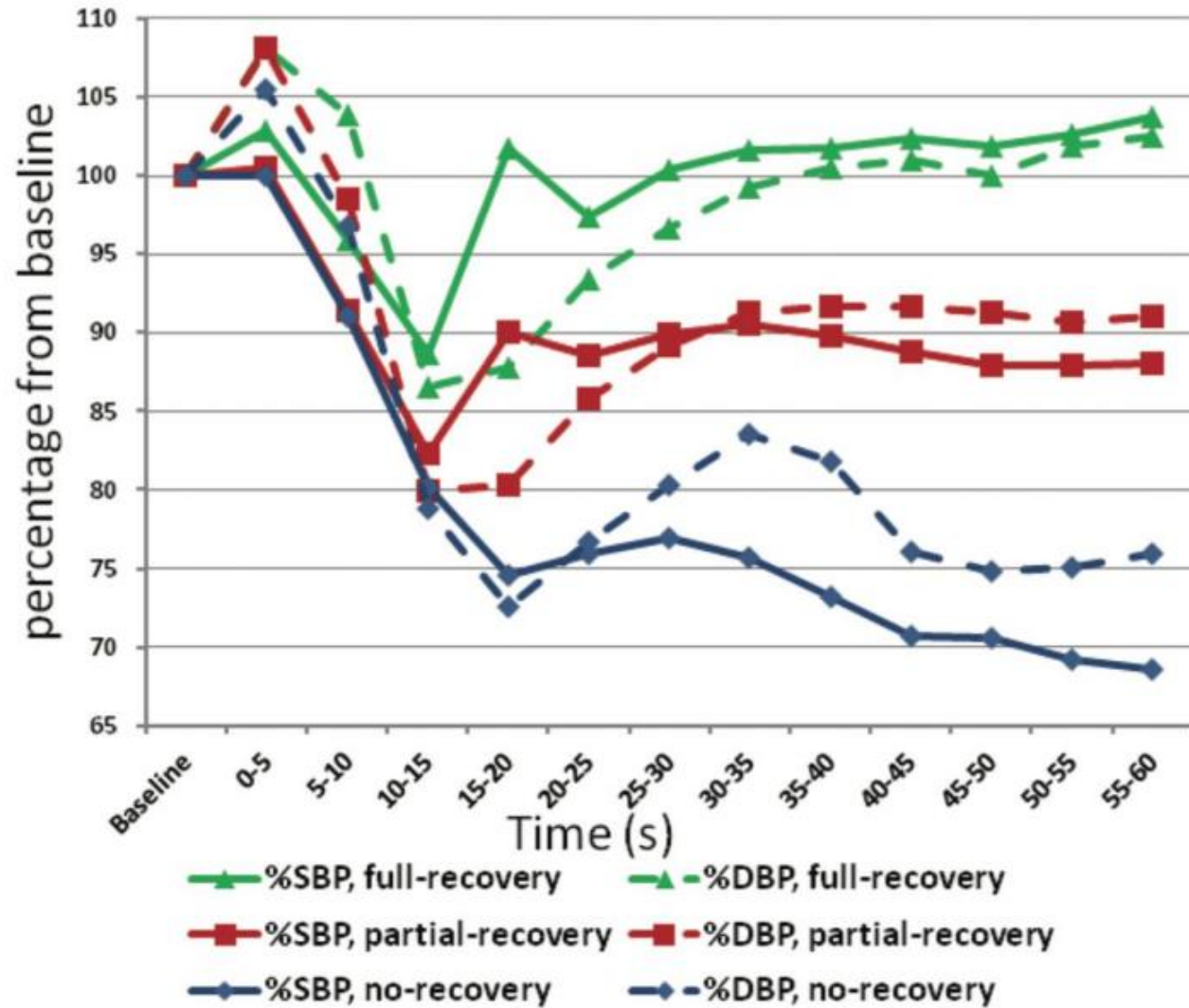


1) Challenge test: perturb the body and measure recovery time

2) Monitoring of natural perturbations: zoom in on “microdynamics”

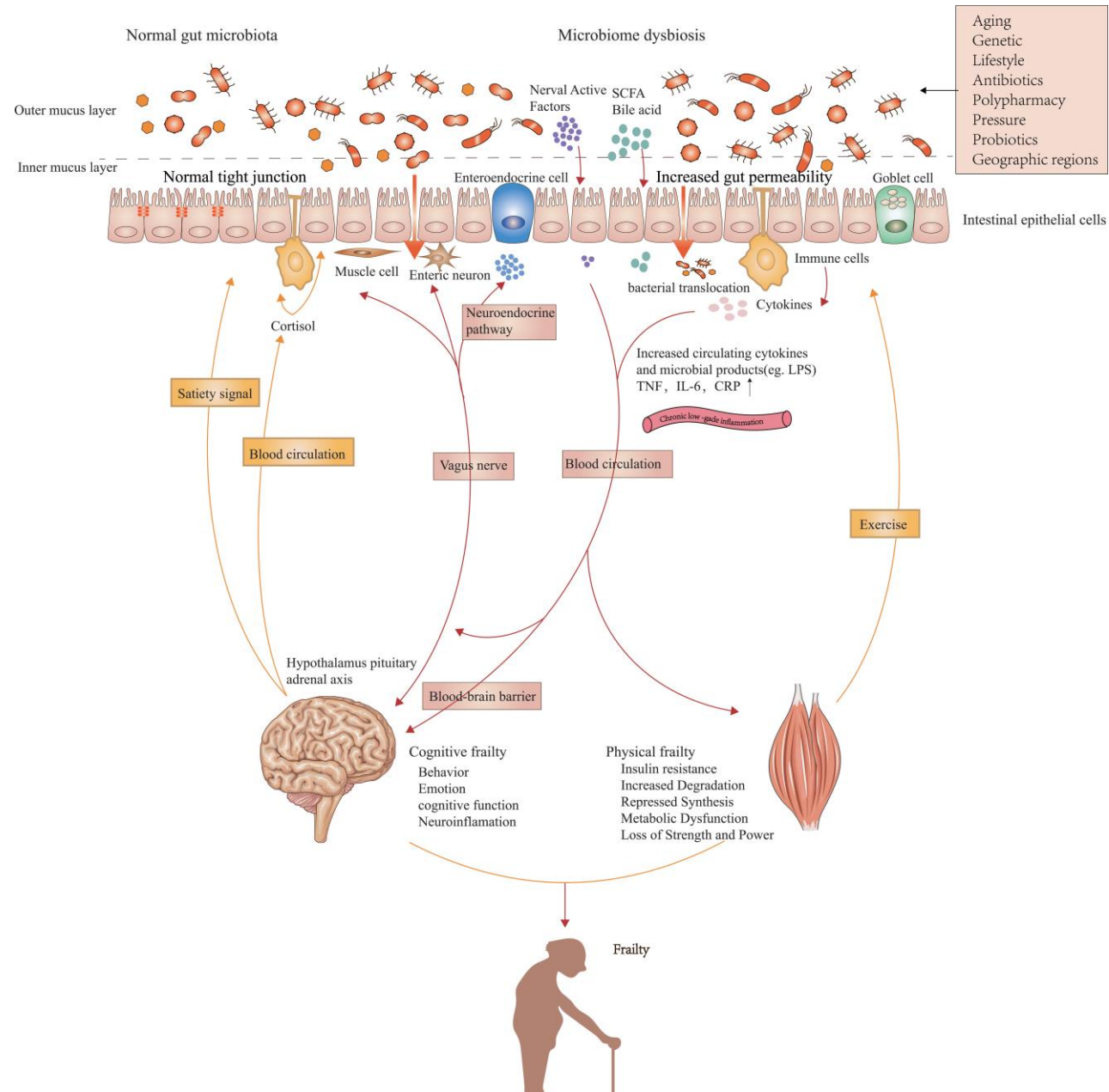
- Heart rate, blood pressure, balance
- Body temperature
- Attention (reaction times)

- Self-rated mood / anxiety / wellbeing / health / fatigue

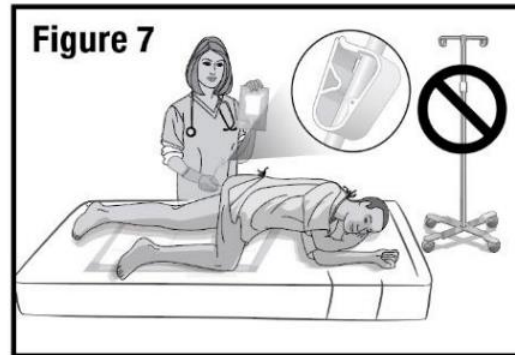
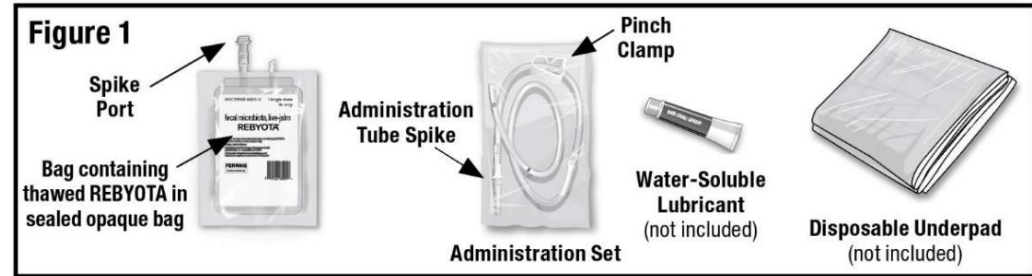


Recovery pattern	Hazard ratio for 12 month mortality (95% CI)
Full recovery	1
Partial recovery	2.20 (0.90 to 5.40)
No recovery	3.09 (1.21 to 7.89)

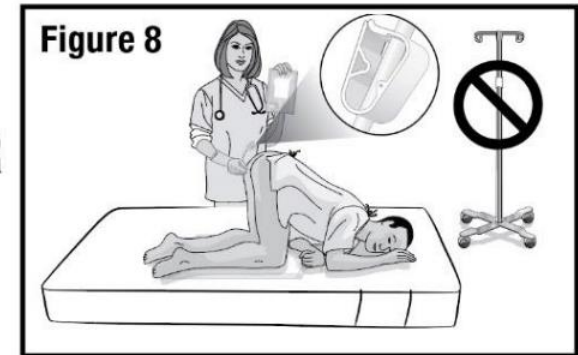
Frailty – Sarcopenie – Resilience – Microbiota



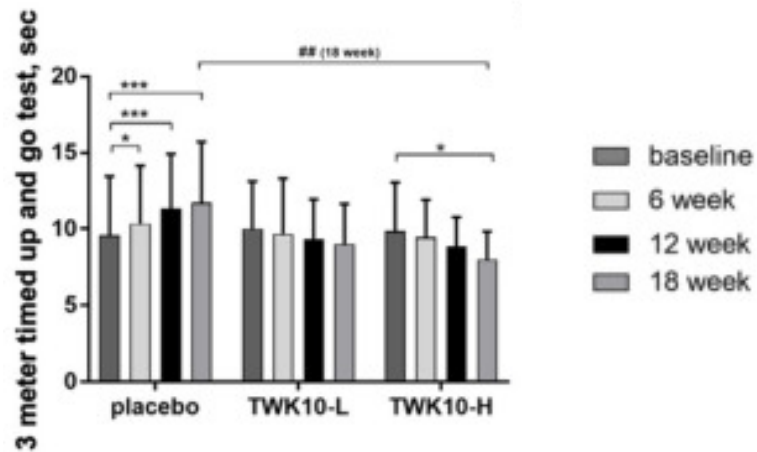
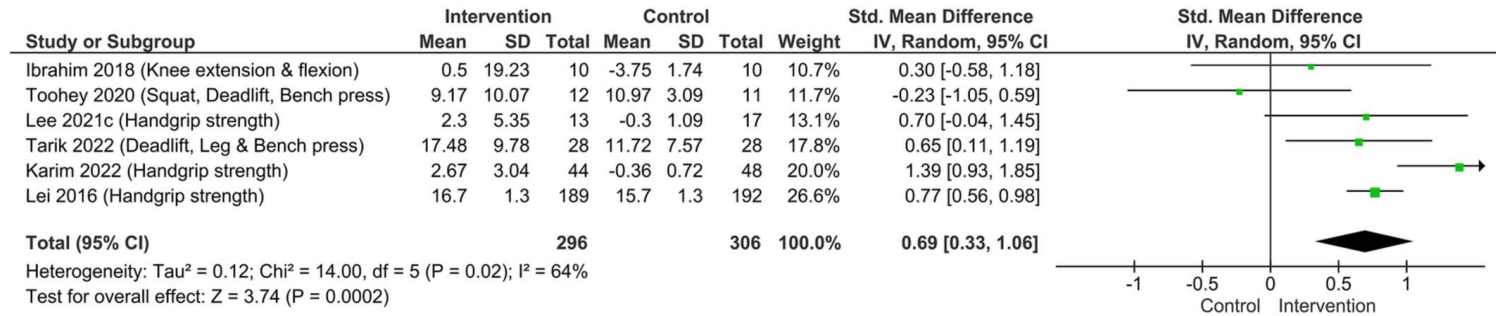
Frailty – Sarcopenie – Resilience – **Microbiota**



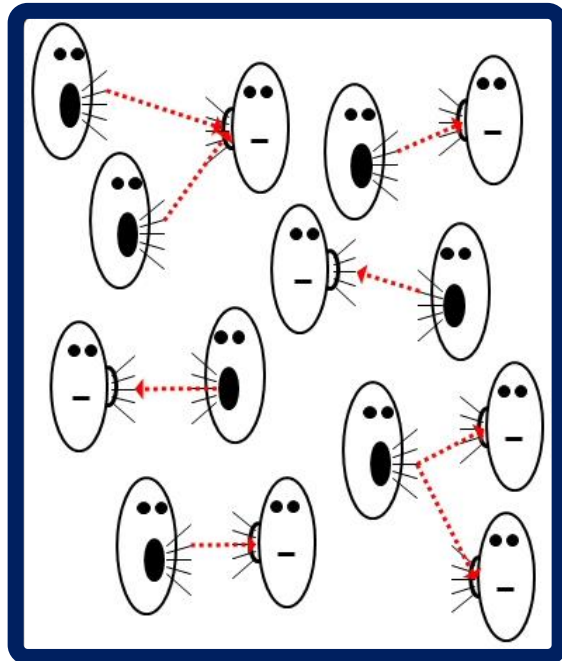
OR



Probiotics can modulate sarcopenia



Microbial community



  : Bacteria

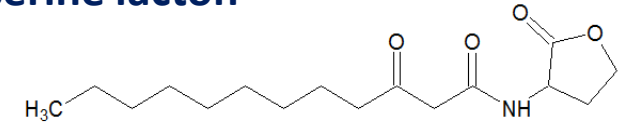
 : Signal molecules

Group behavior

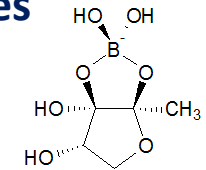
- Biofilm formation
- Antibiotic production
- Sporulation
- Conjugation
- Motility

Types

- N-acyl homoserine lacton

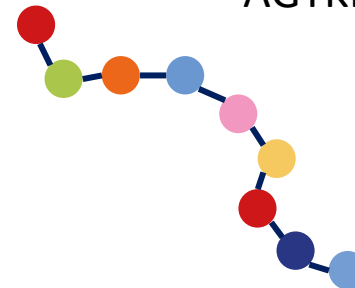


- Boron-furanone derivatives

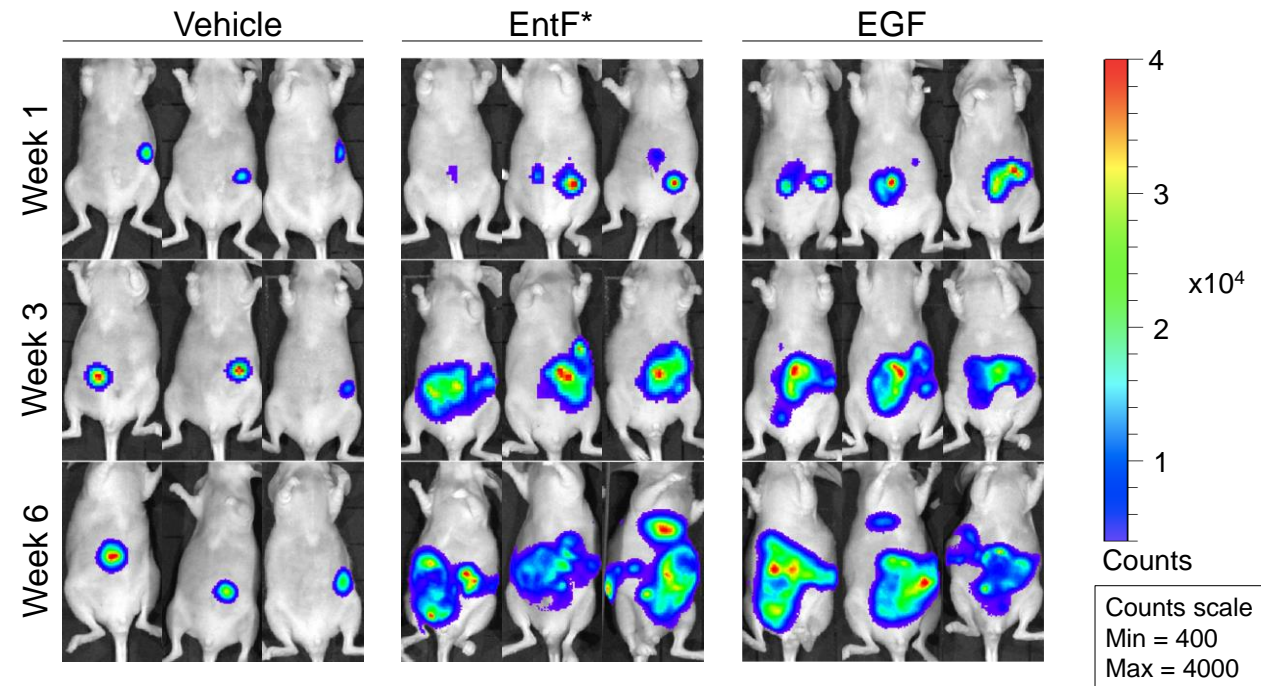


- Peptides

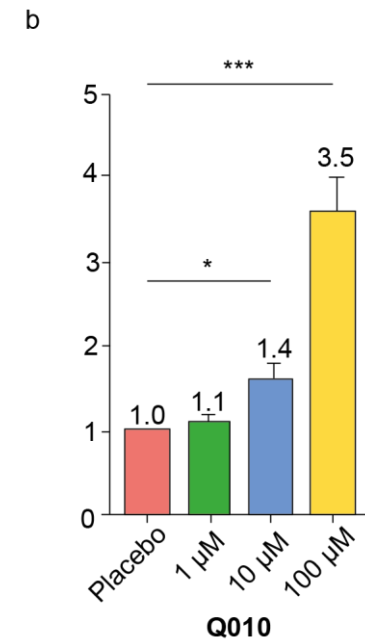
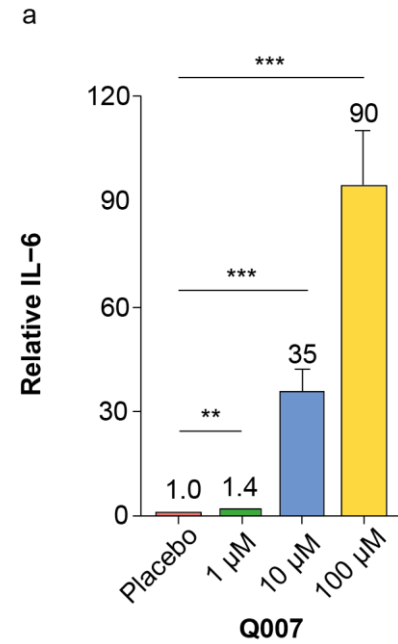
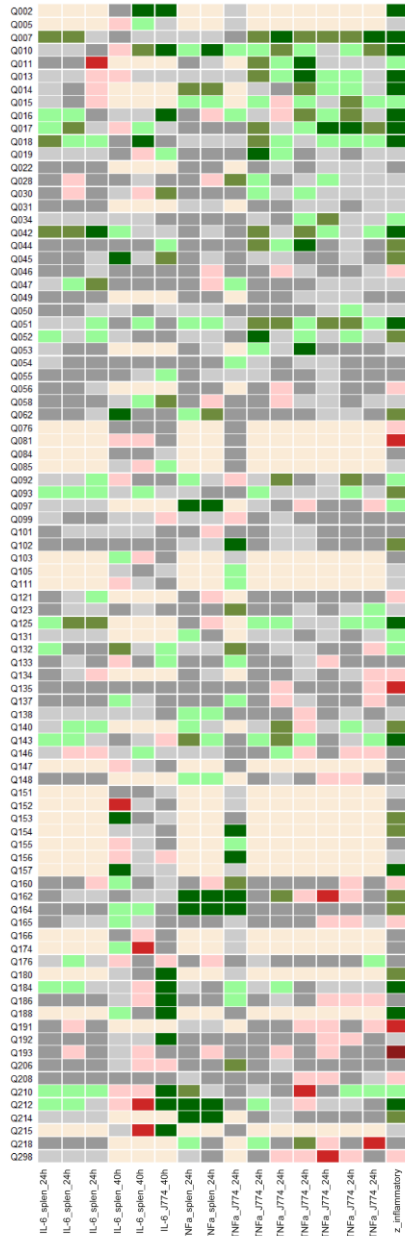
AGTKPQGKPPASNLVECVFSLFKKCN



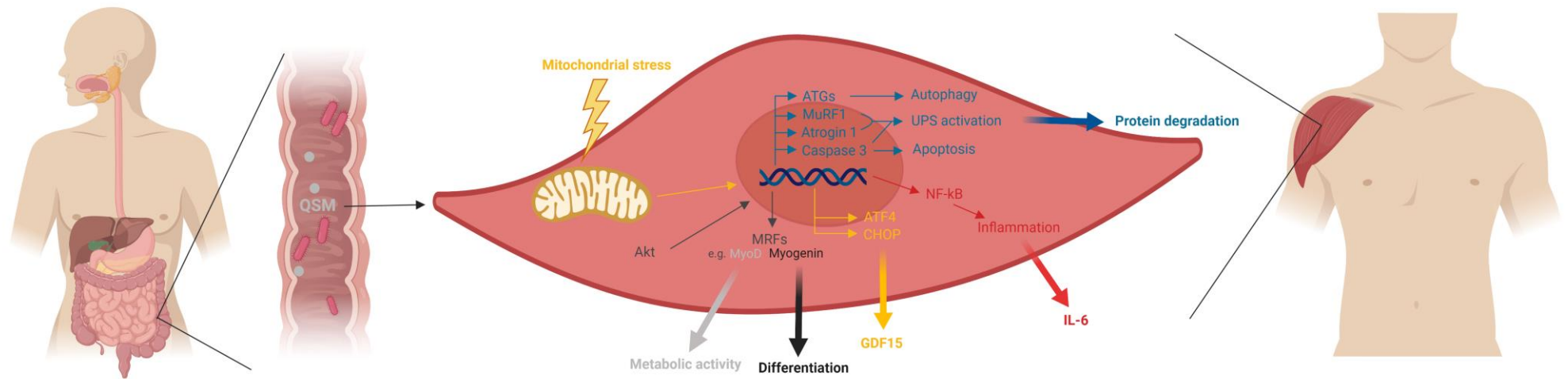
Oncology
Psychiatric diseases
Sarcopenia?



Frailty – Sarcopenie – Resilience – Microbiota

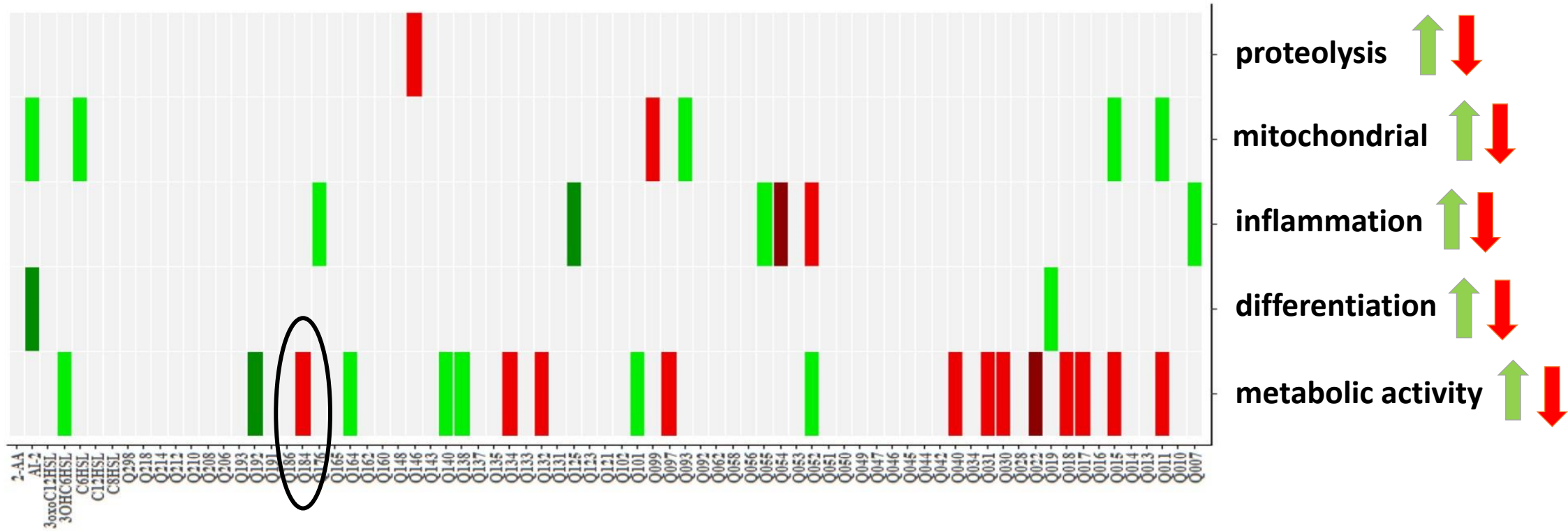
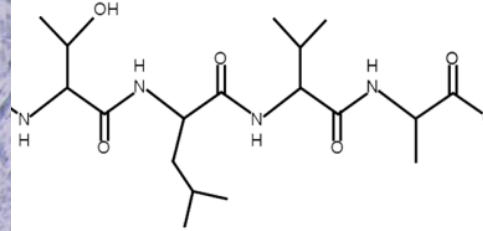
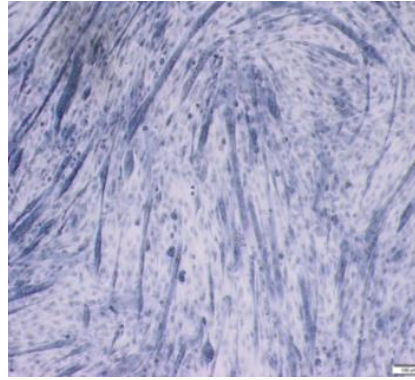


QSM screening

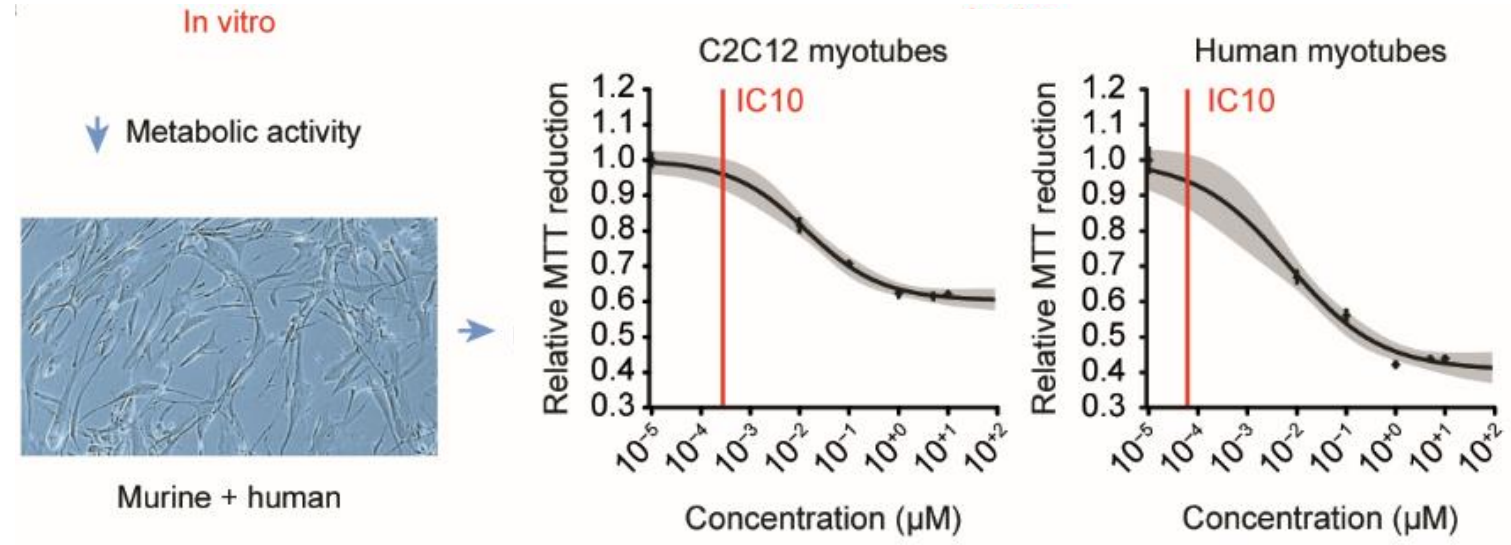


QSM screening

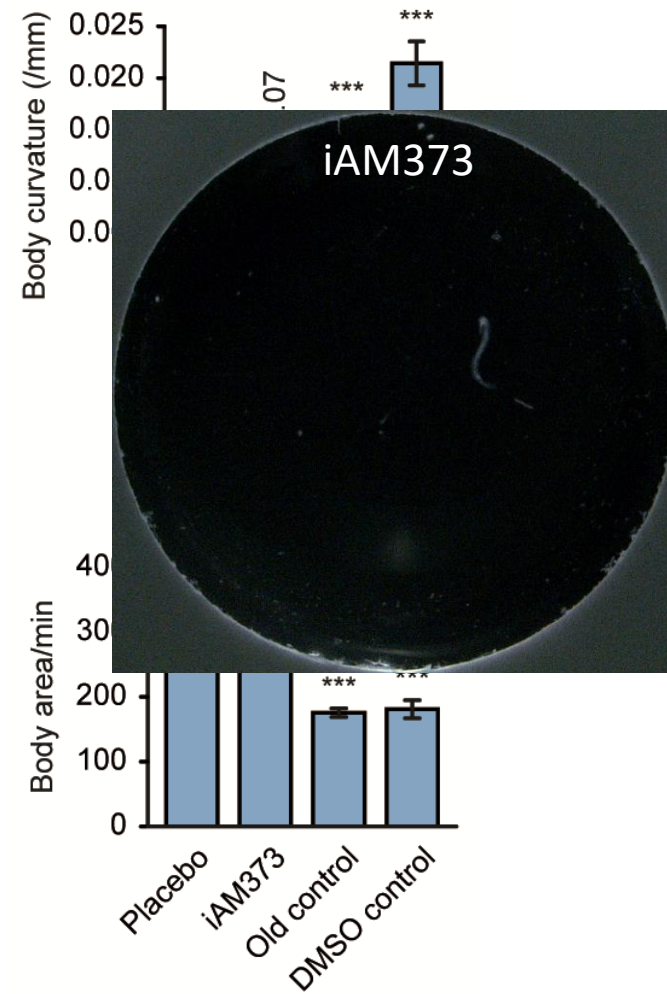
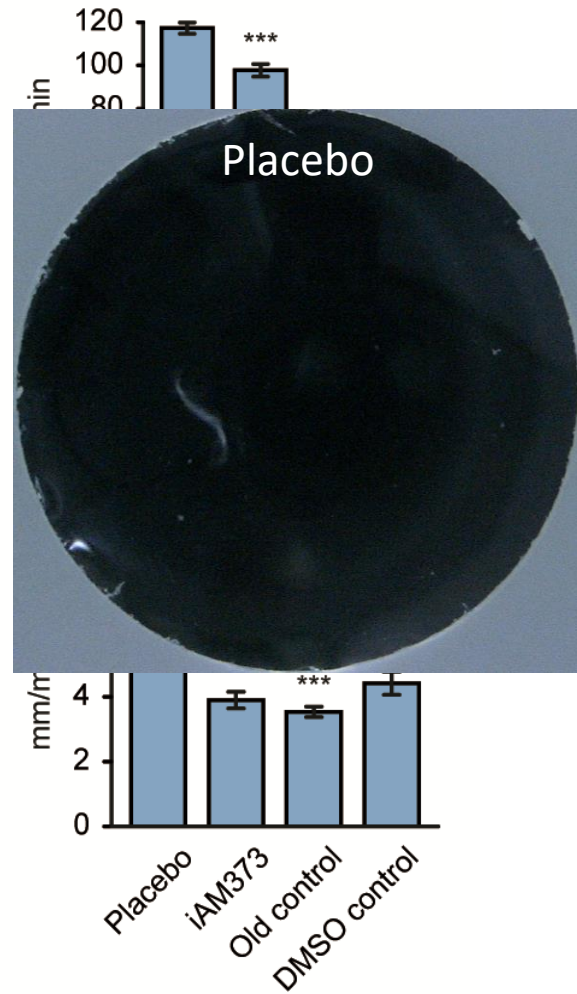
iAM373 (SIFTLVA) < *E. faecalis*



- QSM screening
- iAM373 design
- Effects *in vitro*

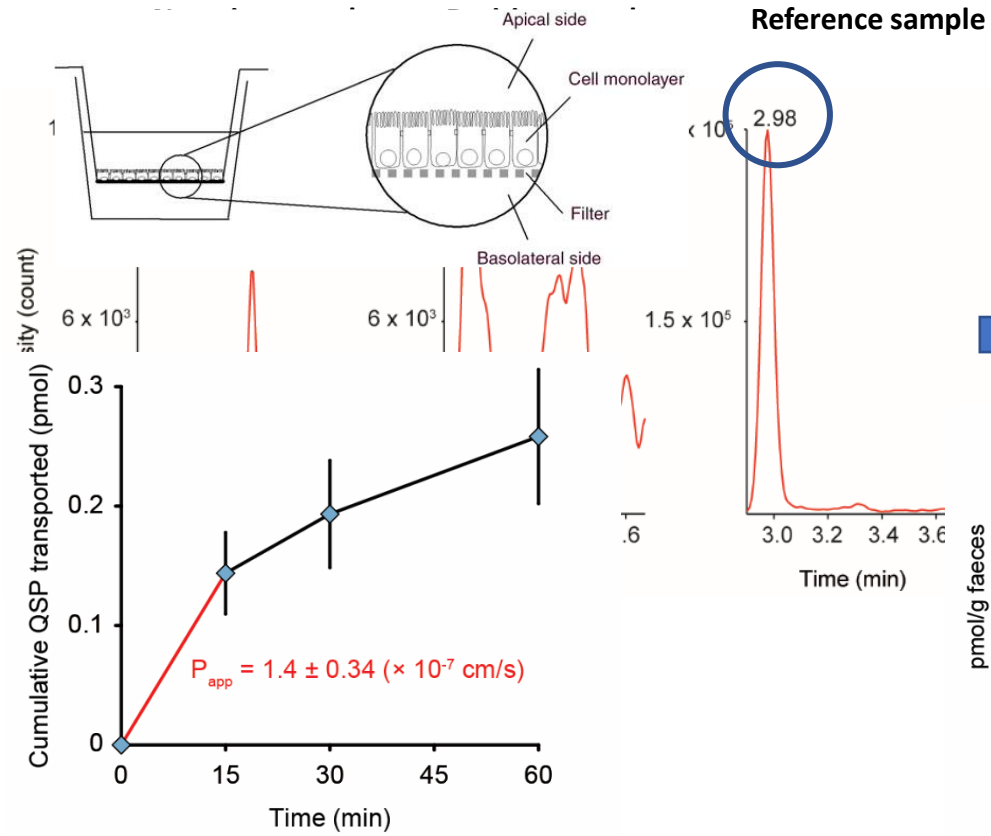


- QSM screening
- iAM373 design
- Effects *in vitro*
- Effects *in vivo*

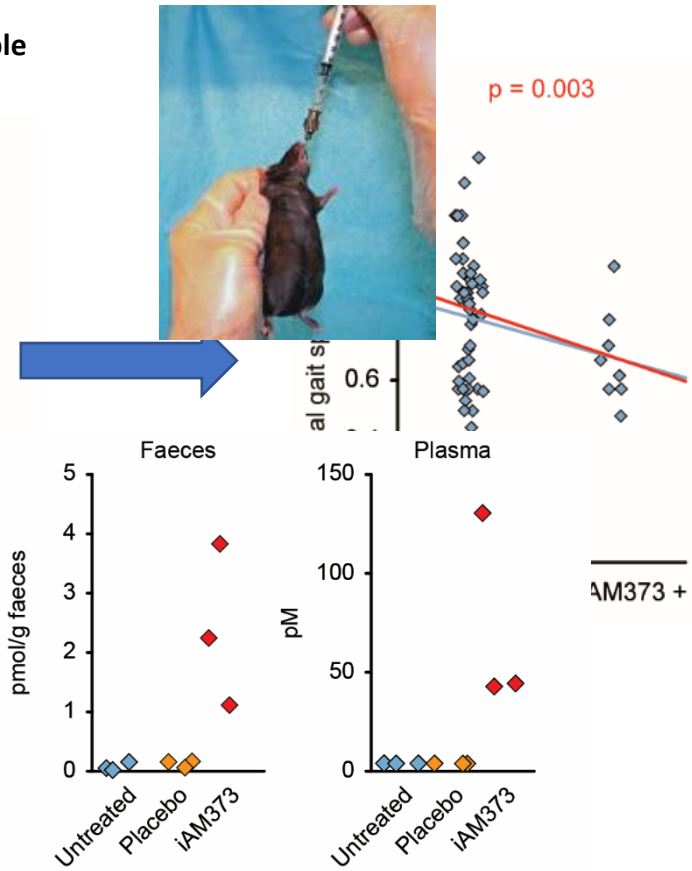


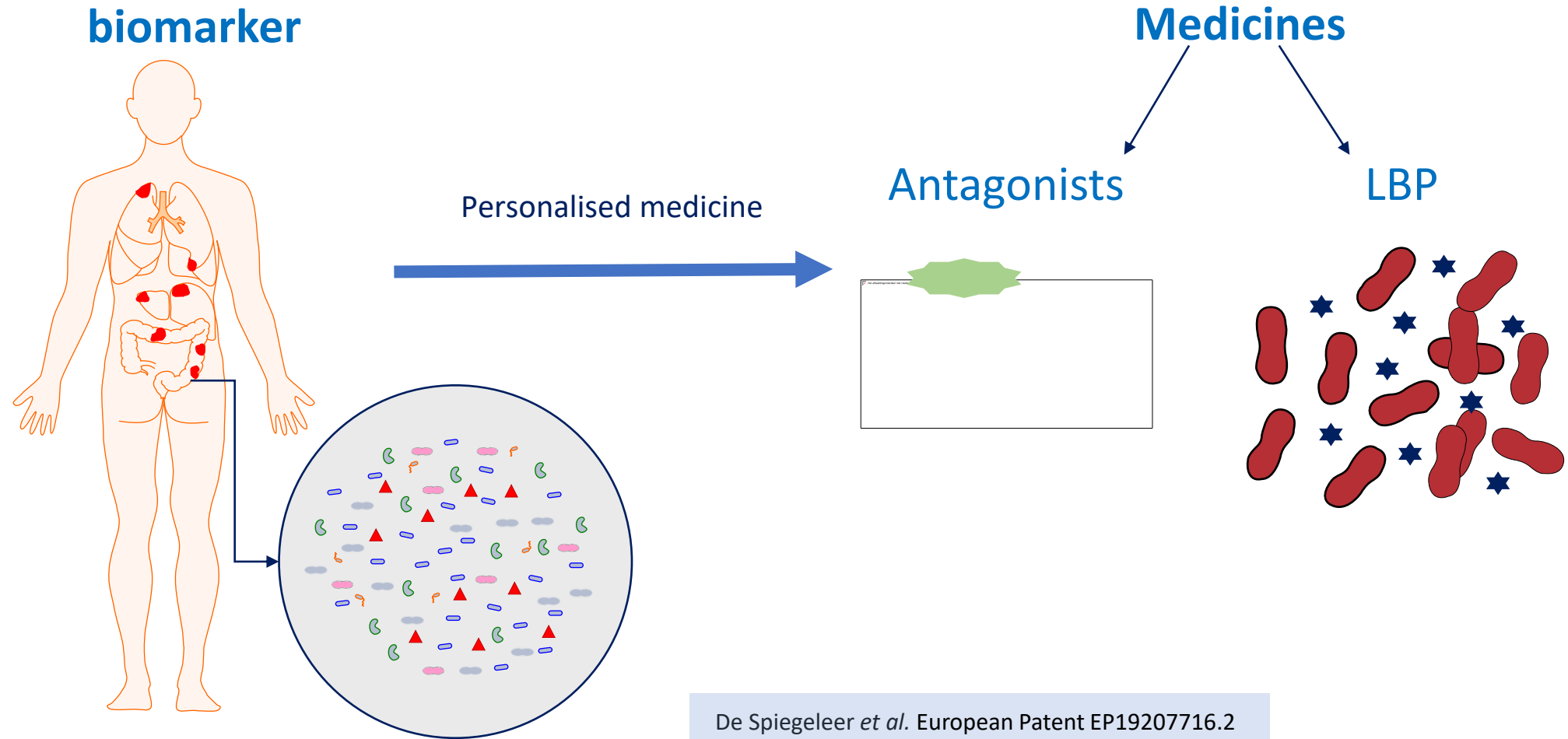
- QSM screening
- iAM373 design
- Effects *in vitro*
- Effects *in vivo*
- Systemic presence
- Association with sarcopenia

CaCo2 *in vitro*



Germ-free *in vivo*







...longer independent living with maximal QOL



TRANSLATIONAL RESEARCH IN IMMUNOSENESCENCE, GERONTOLOGY AND GERIATRICS

Our mission is to make people age healthy

Aging is one of the biggest challenges of the 21st century that affects every aspect of society. TRIGG scientists combine multidisciplinary forces to tackle unhealthy ageing, striving for infinite healthy years in men and women. [Read more about our mission](#)

About us

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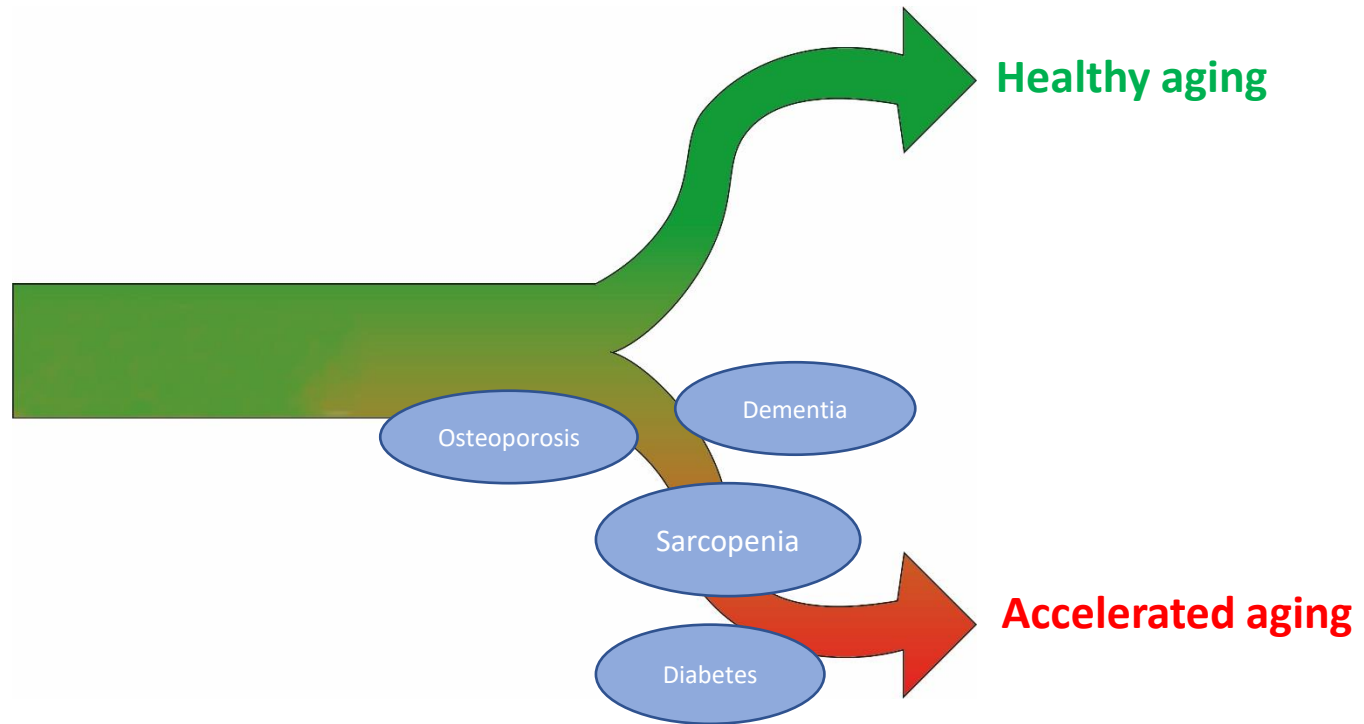


Maarten Vion

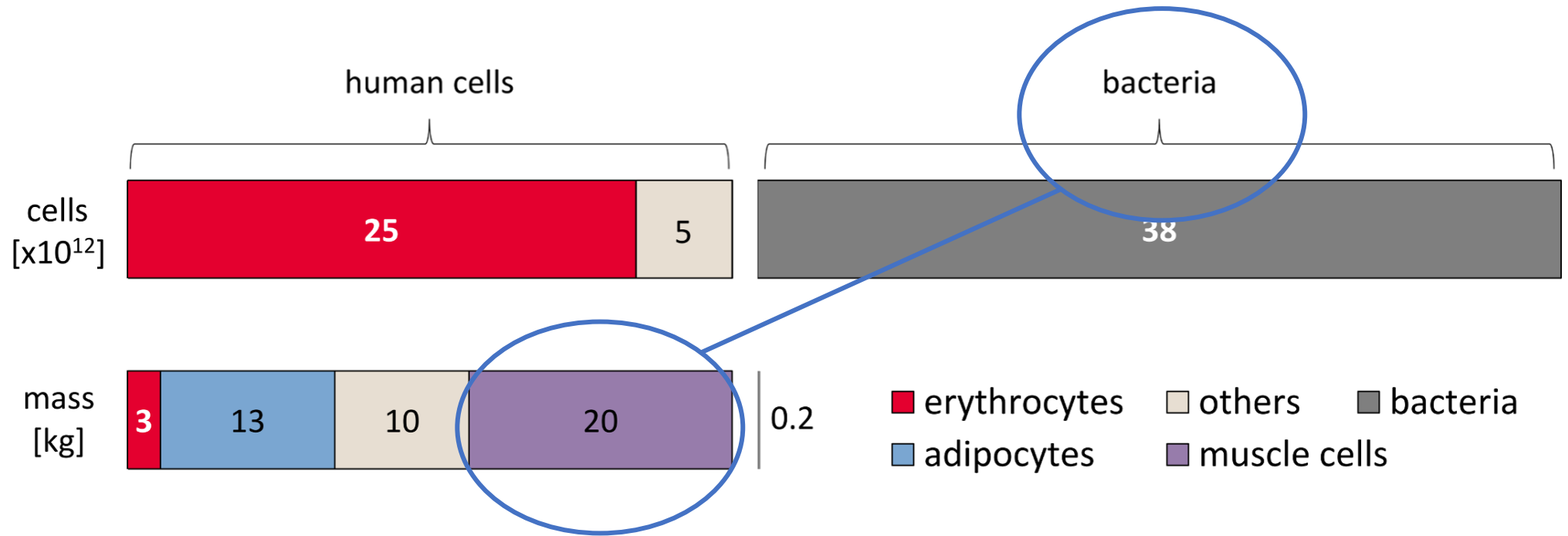
TRIGG Communication
Ghent University Hospital

Thesis students:
Jonas Calewaert
Joni Mul

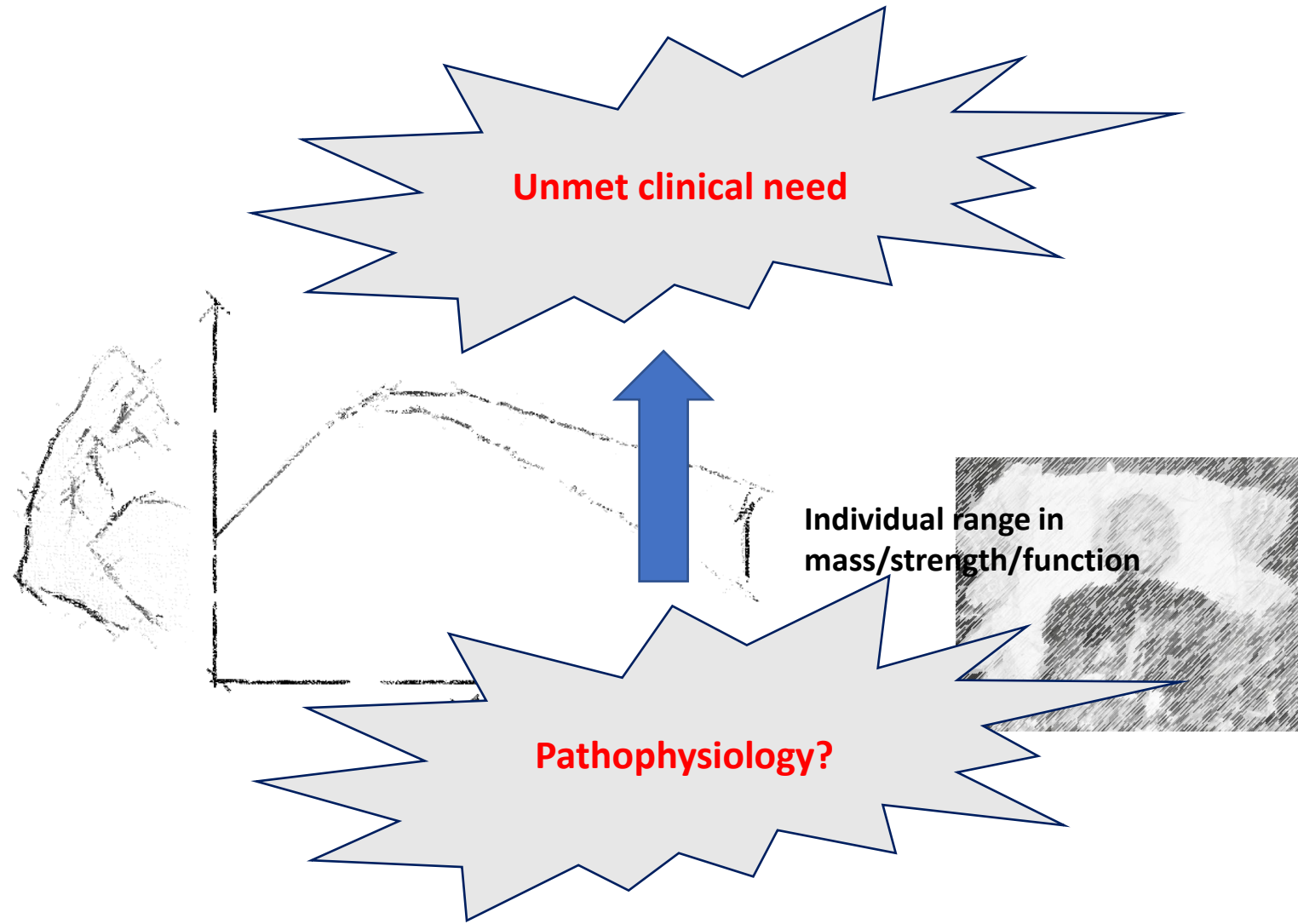
Sarcopenia – Gut - Quorum Sensing



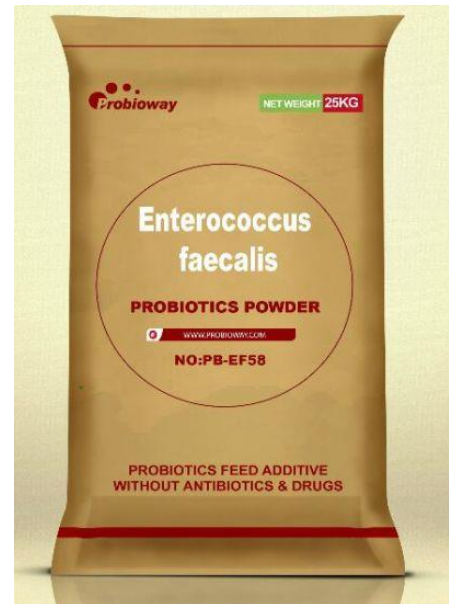
Sarcopenia – Gut - Quorum Sensing



Sarcopenia – Gut - Quorum Sensing



Safety?



*... is een microbiologisch preparaat met de *Enterococcus faecalis* bacterie. Dat is één van de meest belangrijke goede darmbacteriën en komt van nature in ons lichaam voor.*

Goede darmbacteriën ondersteunen de darmflora en een gezonde darmflora draagt bij aan de normale werking van een gezond immuunsysteem.



Research

Bacterial peptides in the gut-muscle axis

Increasing evidence points towards an association between the gut microbiome and sarcopenia, the muscle wasting associated with ageing. However, the mechanisms behind these associations are still unclear, hampering the translational...

Innate-like lymphocytes in muscle wasting

Immunosenescence comprises the changes in immunity that come with aging. Both the adaptive and the innate immune system are altered. For example, the aged innate immune system is characterized by...

Saliva metabolomics in older people

Recent studies have identified different bacterial metabolites in human saliva [1, 2]. However, the ageing shifts in metabolites are not well characterized yet. At TRIGG, we are currently optimizing protocol...

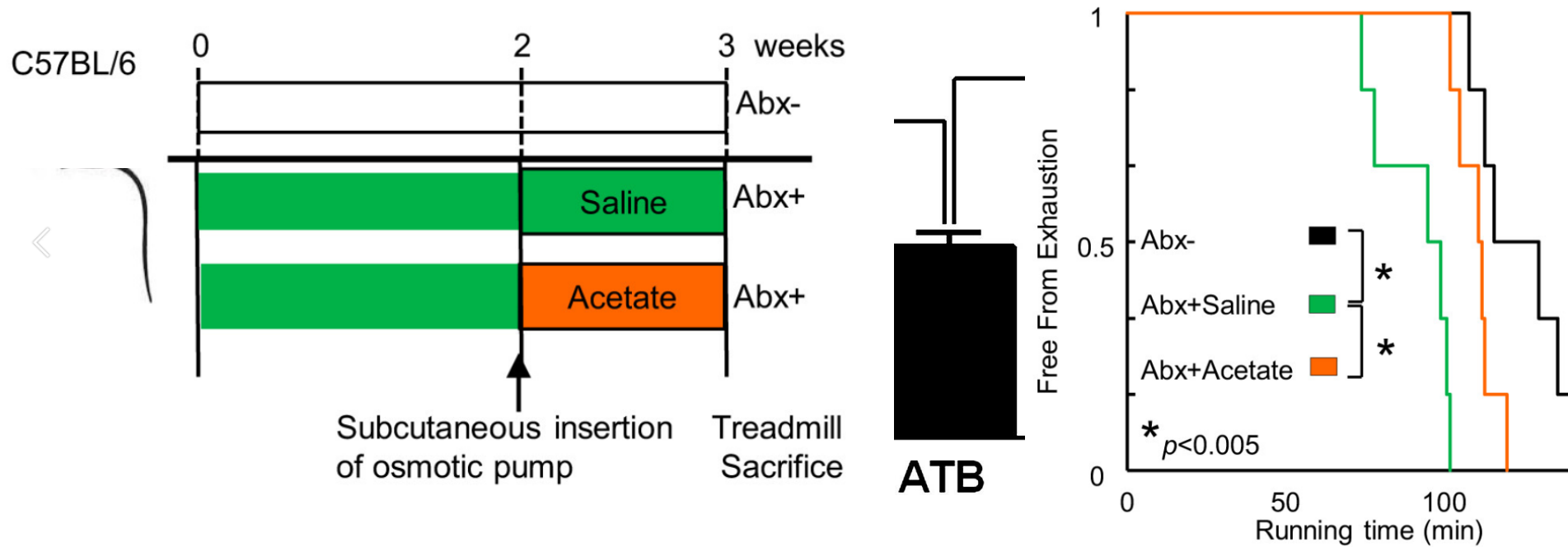
Common drugs as geroprotectors

Geroprotectors are the name given to compounds that can slow down ageing and promote healthy lifespan. Although hundreds of compounds are known to extend the lifespan of laboratory organisms, clinical...

Quorum sensing peptides in the ageing immune system

Quorum sensing peptides (QSPs) are characteristic bacterial products, constitutively produced by living bacteria and exhibiting an increased and/or altered production in “stress” conditions. They have long been considered as intra-bacterial...

2 Systemic bacterial metabolites play a role in detecting microbiota-induced muscle weakness

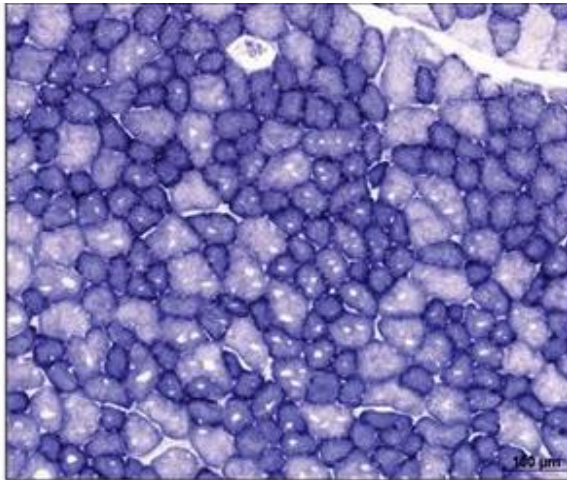


3 Gut-muscle axis \neq fixed

'normal'

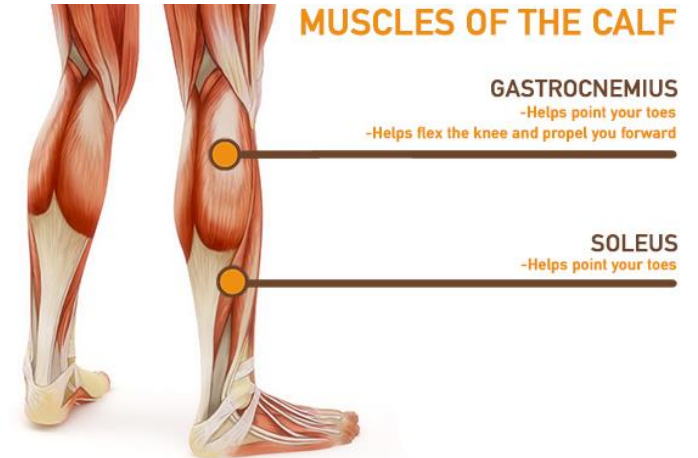
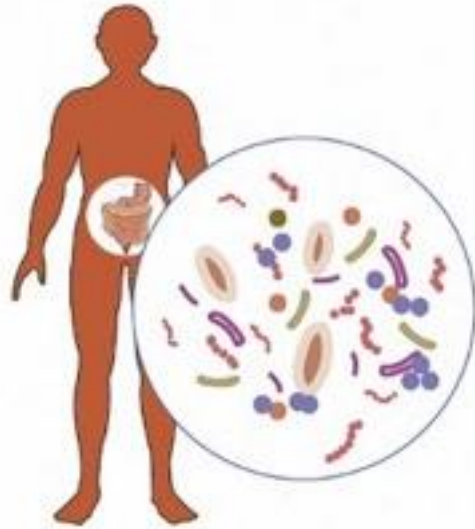
germ-free

recolonized



4

Human sarcopenia ~ gut microbiota



Leave Dirty Recto-Anal Colonies Outside Everywhere

- Lactobacillus
- Dorea
- Ruminococcus
- Acetanaerobacterium
- Anaerotruncus
- Coprobacillus
- Oscillospira
- Enterobacteriaceae
- Eggerthella lenta
- Eubacterium dolichum

Be Ready For a Large Calf

- Barnesiella
- Roseburia
- Faecalibacterium prausnitzii
- Lachnospira
- Coprococcus