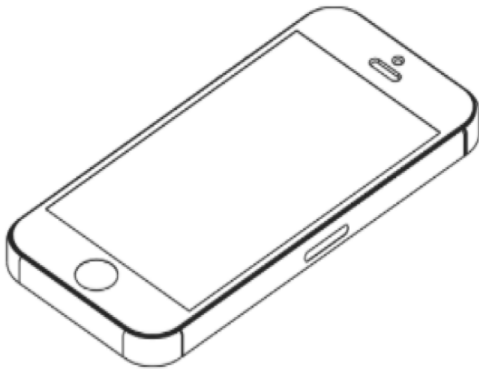


When medicine discovered sex

Sarah Hiltner
18-12-2018

Go to www.menti.com and use the code 30 30 63



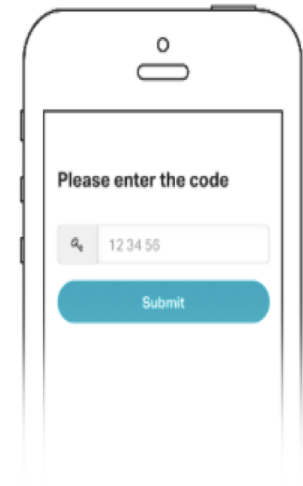
1

Grab your phone

www.menti.com

2

Go to www.menti.com



3

Enter the code 30 30 63 and vote!

To participate join at www.menti.com Insert Code 30 30 63

- Father and son are driving in their car. They are having an accident, both are picked up by ambulances. The son got injured at his penis and is delivered to a specialist unit in a different hospital than his father. Once the son has been brought into the operating room the attending urological surgeon comes in and says:
 - ‘I cannot operate. This is my son.’
 - How are the son and the surgeon related?

**Universität Köln (2015) „UeberzeuGENDERe Sprache
Leitfaden für eine geschlechtersensible und inklusive Sprache“**

We live in a gendered world

Radboudumc

Overview

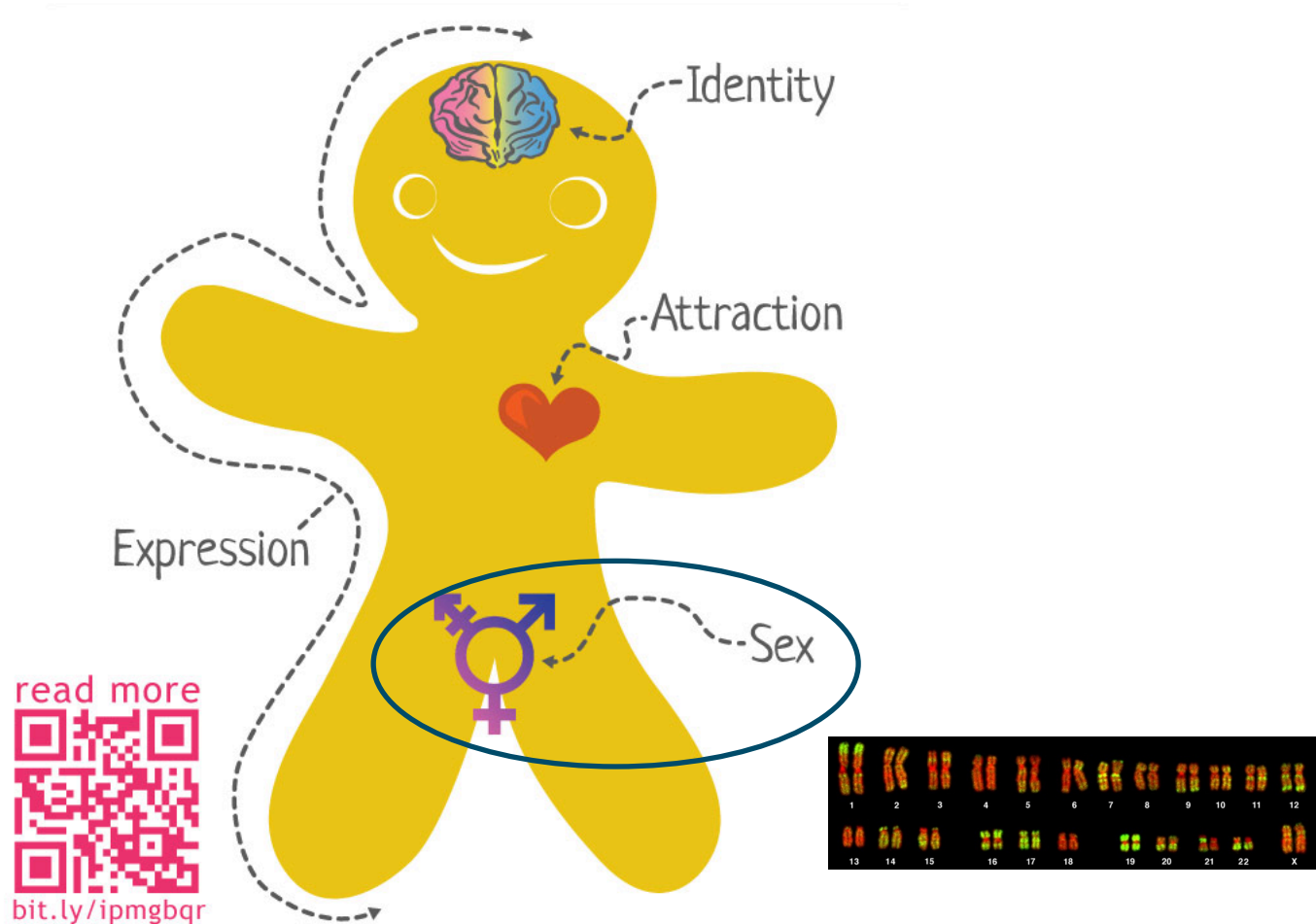


Hacking the medical system

Sarah Hiltner
18-12-2018

Radboudumc

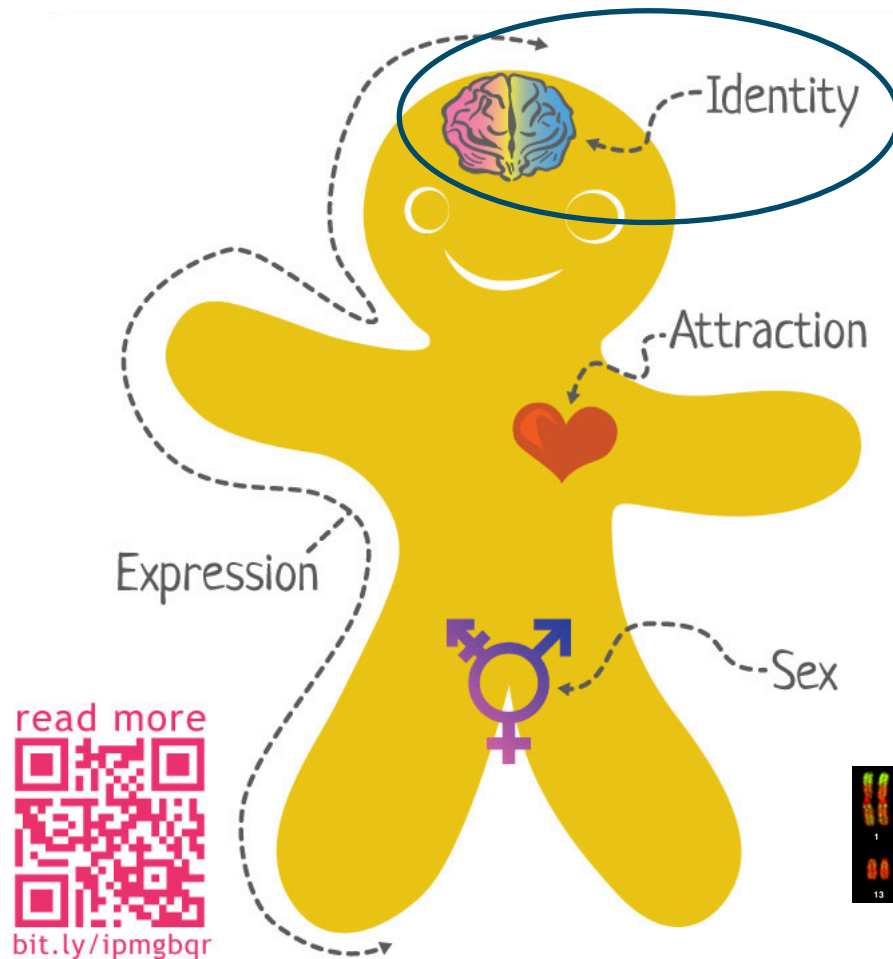
Sex



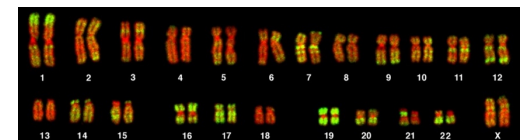
By Sam Killermann www.itspromouncedmetrosexual.com

By Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. PLoS Biol 3(5): e157 DOI: [10.1371/journal.pbio.0030157](https://doi.org/10.1371/journal.pbio.0030157), Figure 7a, <https://commons.wikimedia.org/w/index.php?curid=1371900>

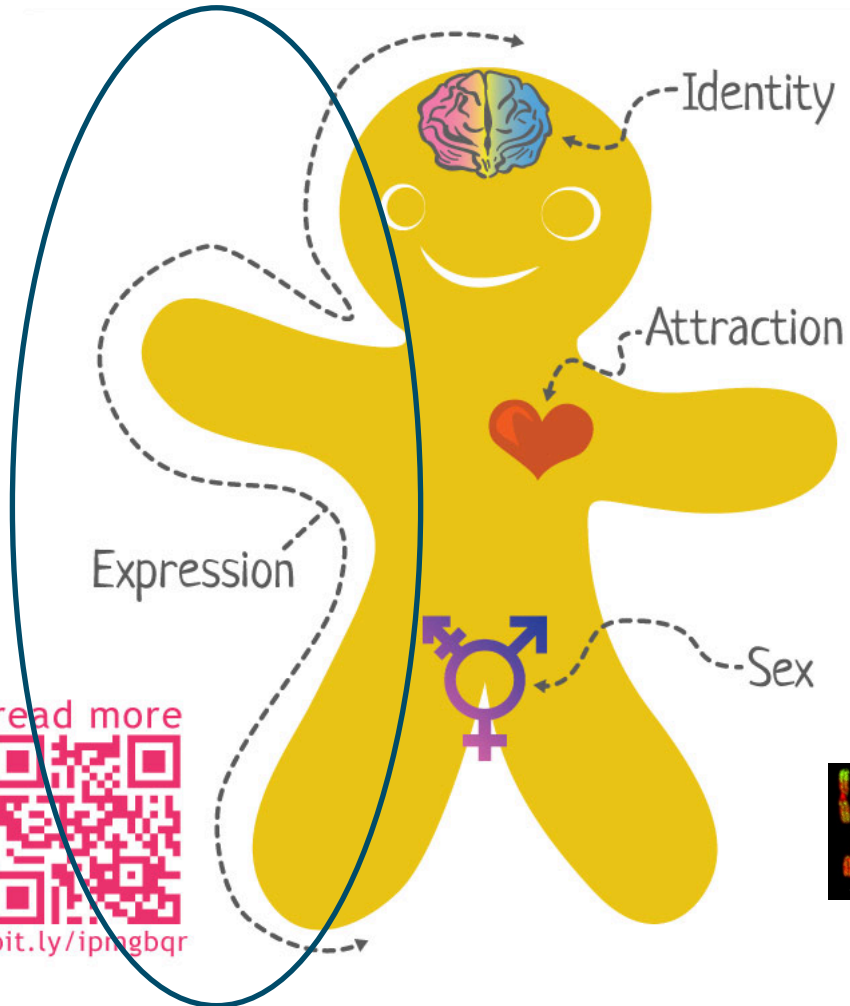
Gender



PRINCE FLORINDO FINDS THE SLEEPING BEAUTY



Gender

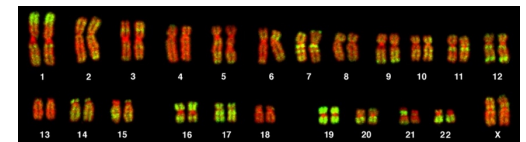


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PRINCE FLORIBON KNEELS FOR THE BLESSING BEAUTY



By Sam Killermann www.itspronouncedmetrosexual.com

By Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. *PLoS Biol* 3(5): e157 DOI:10.1371/journal.pbio.0030157, Figure 7a, <https://commons.wikimedia.org/w/index.php?curid=1371900>

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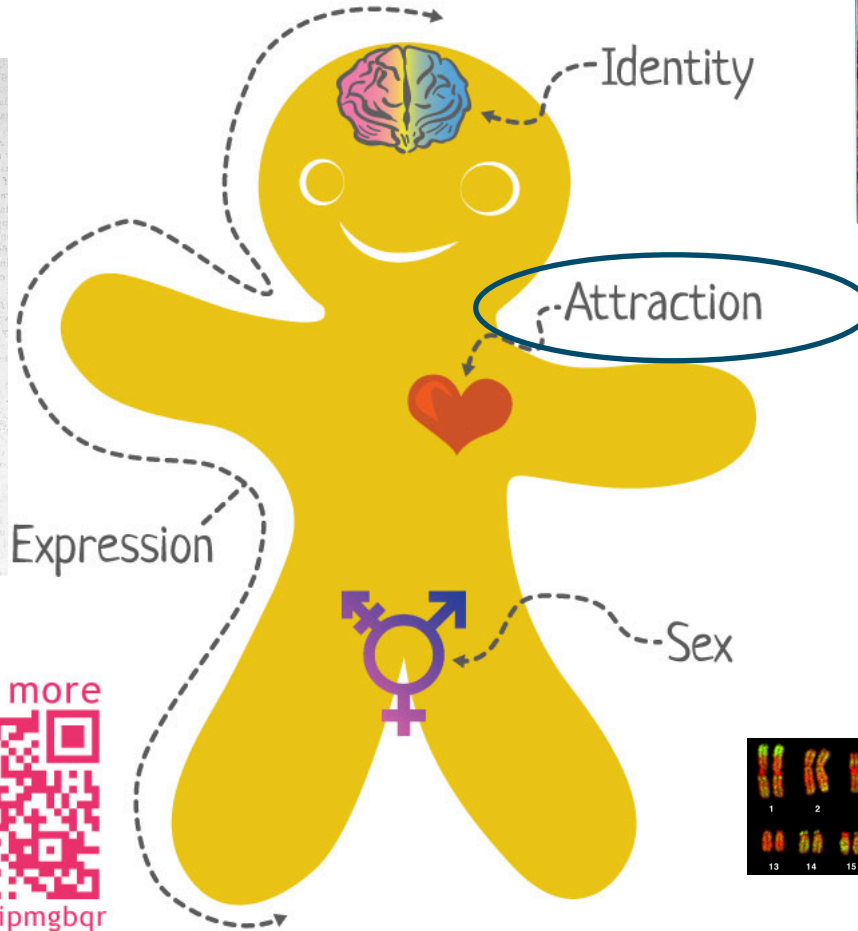
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Published: Jan 2 to June 26 1858

Attraction

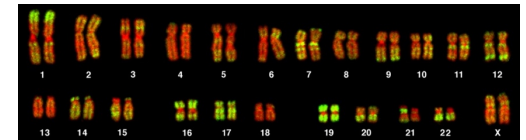


PRINCE FLORINDO FINDS THE SLEEPING BEAUTY



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By Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. *PLoS Biol* 3(5): e157 DOI:10.1371/journal.pbio.0030157, Figure 7a, <https://commons.wikimedia.org/w/index.php?curid=1371900>

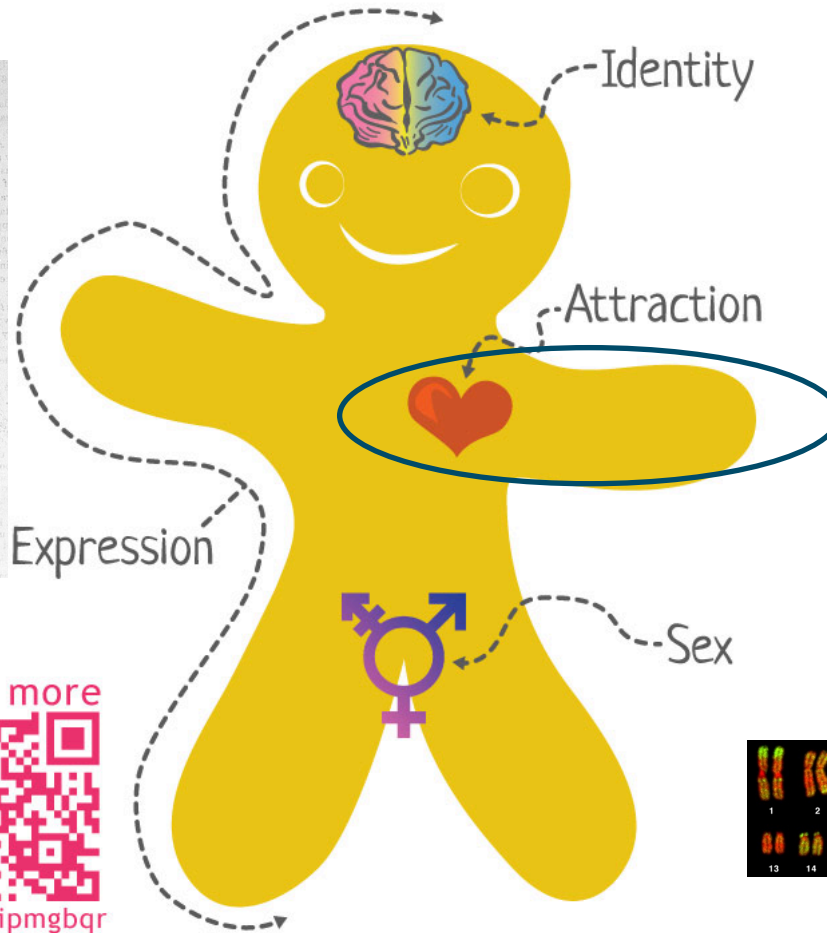
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Wellcome Library, London. Wellcome Images images@wellcome.ac.uk <http://wellcomeimages.org> 'Suicidal melancholy' after a photograph by H. W. Diamond Lithograph By: W. Baggafter: Hugh Welch Diamond The Medical Times and Gazette

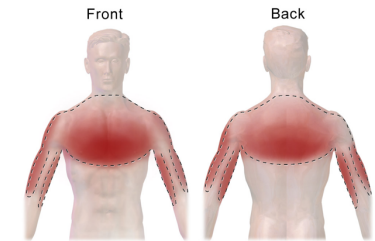
Published: Jan 2 to June 26 1858

Image: by BruceBlaus [CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0/>)], from Wikimedia Commons

Heart attack



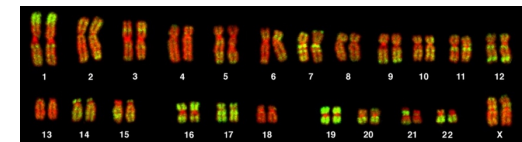
PRINCE FLORINDO FINDS THE SLEEPING BEAUTY



Front

Back

Intensity and Location of Chest Pain or Discomfort



By Sam Killermann www.itspronouncedmetrosexual.com

By Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. *PLoS Biol* 3(5): e157 DOI:10.1371/

journal.pbio.0030157, Figure 7a, <https://commons.wikimedia.org/w/index.php?curid=1371900>

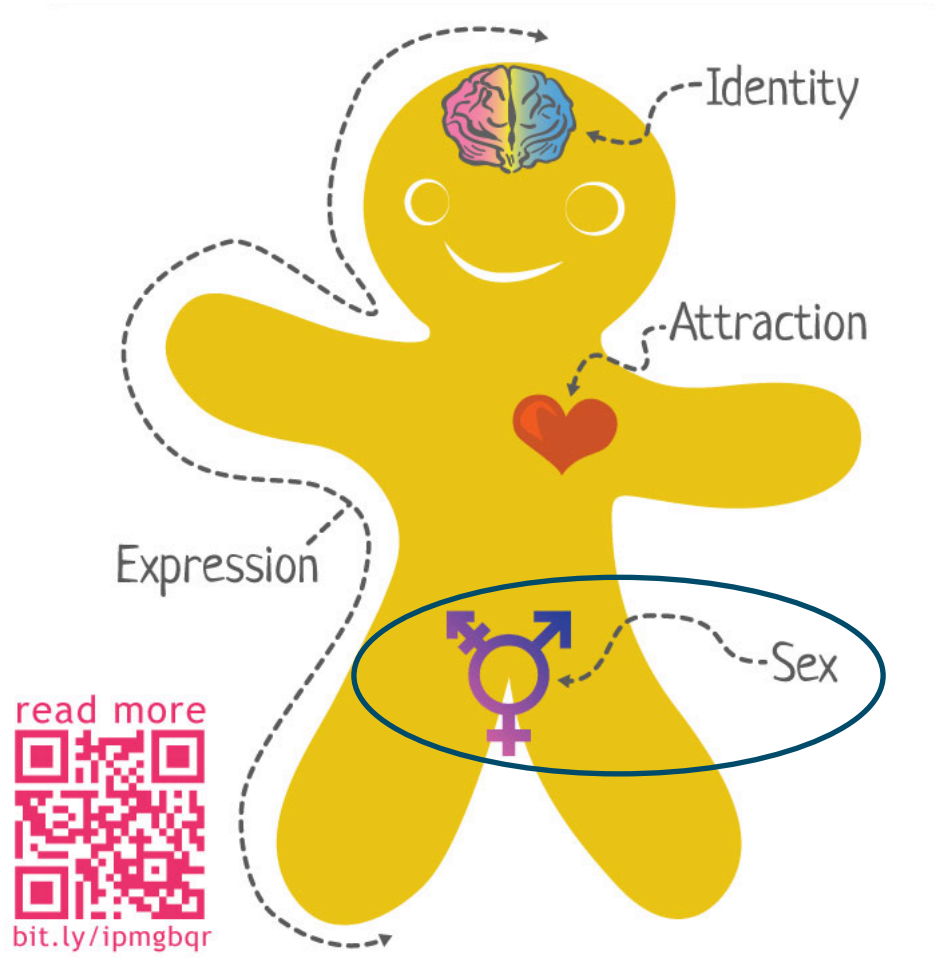
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Wellcome Library, London. Wellcome Images images@wellcome.ac.uk <http://wellcomeimages.org> 'Suicidal melancholy' after a photograph by H. W. Diamond Lithograph By: W. Baggafter: Hugh Welch Diamond The Medical Times and Gazette

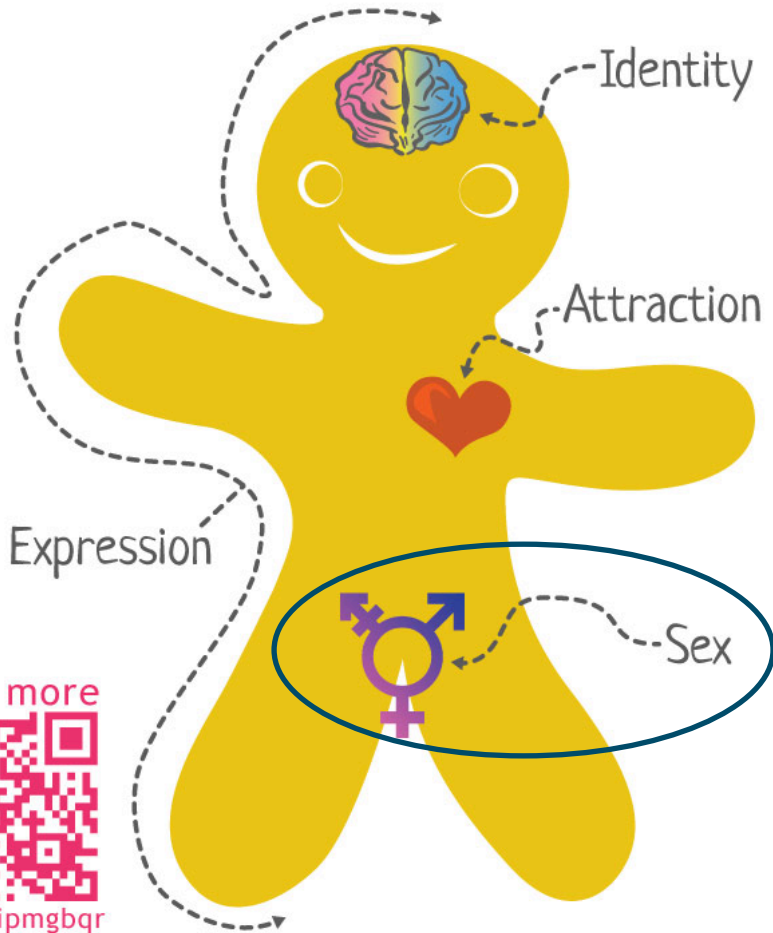
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Image: by BruceBlais [CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0/>)], from Wikimedia Commons

Sex



Sarah as a Genderbread Person



Read more

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Anatomical Sex



Female-ness



Male-ness

body hair, chest, hips, shoulders, hormones
penis, vulva, chromosomes, voice pitch

common ANATOMICAL SEX things

Sex Assigned At Birth



Female



Intersex



Male

Asking about someone's genitalia?



Same body

- Ancient:
 - One sex body
- Enlightenment:
 - Two sex body
- Gender medicine
 - Sex and gender

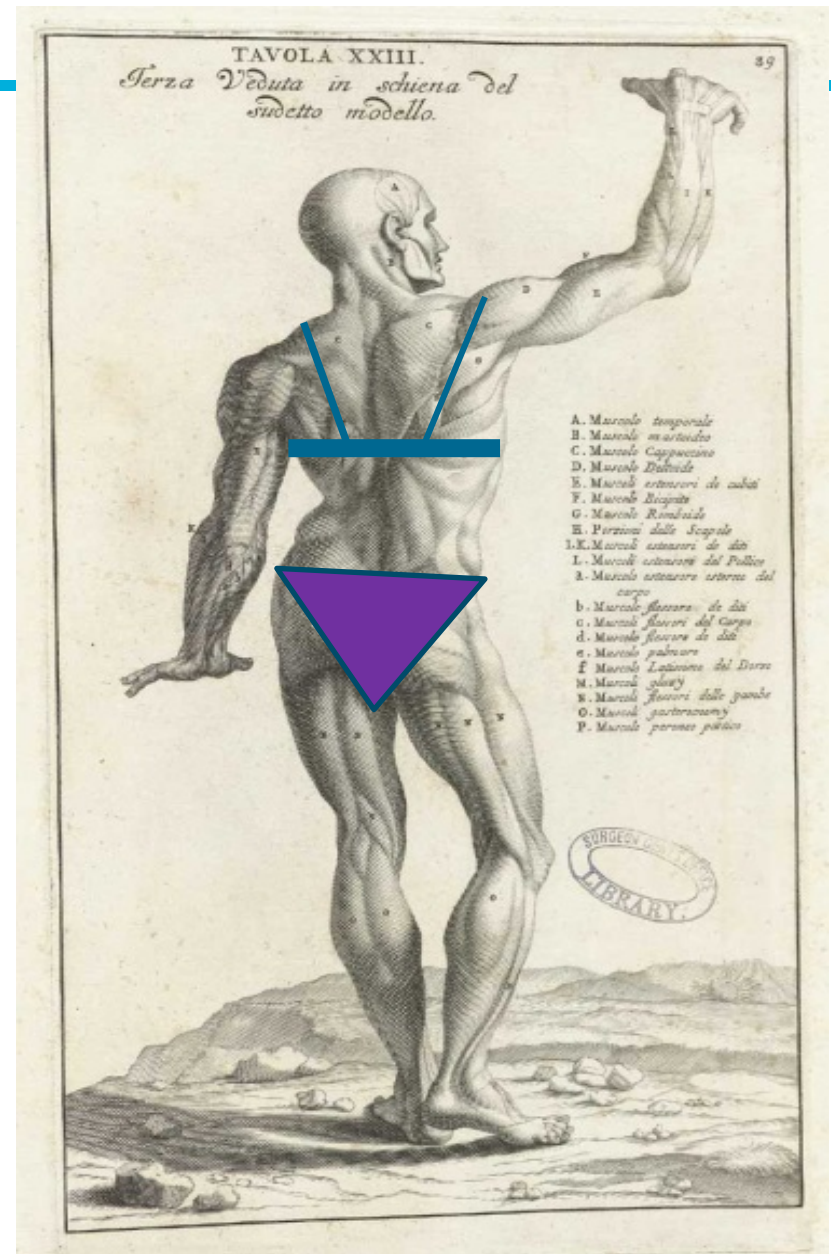
(Laqueur 1990)



Same body

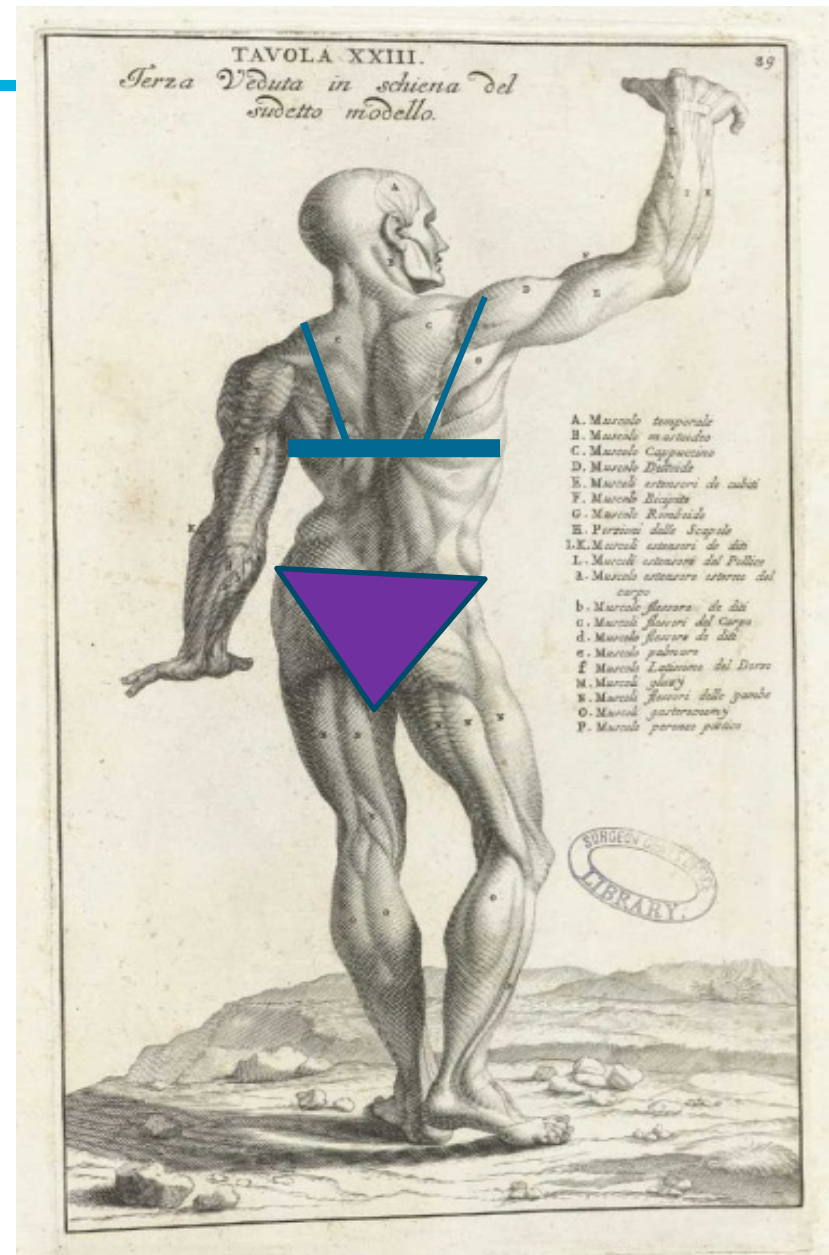
- Ancient:
 - One sex body
- Enlightenment:
 - Two sex body
- Gender medicine
 - Sex and gender

(Laqueur 1990)

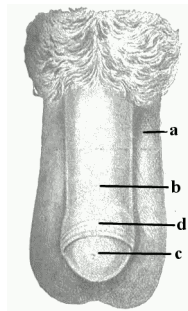
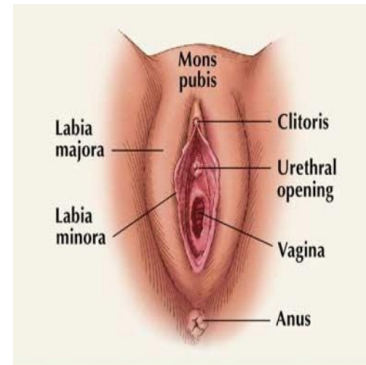


Same body

- Ancient:
 - One sex body
- Enlightenment:
 - Two sex body
- Gender medicine
 - Sex and gender

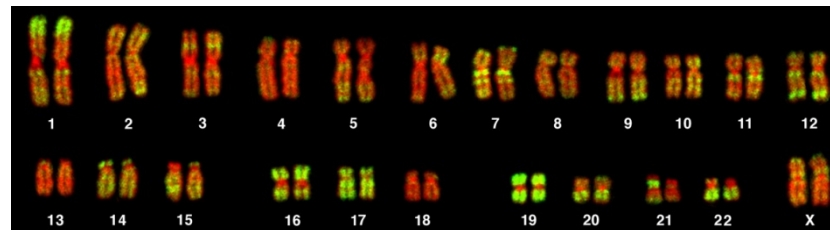


Sex



Hormones

- Pheromones



Parts of human penis. Illustration from Polish medical handbook - 1905.

By Sshirly - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=26225563>

By Andreas Bolzer, Gregor Kreth, Irina Solovei, Daniela Koehler, Kaan Saracoglu, Christine Fauth, Stefan Müller, Roland Eils, Christoph Cremer, Michael R. Speicher,

Thomas Cremer - Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. PLoS Biol 3(5): e157 DOI: 10.1371/journal.pbio.0030157, Figure

7a, CC BY 2.5, <https://commons.wikimedia.org/w/index.php?curid=1371900>

Influences of sex

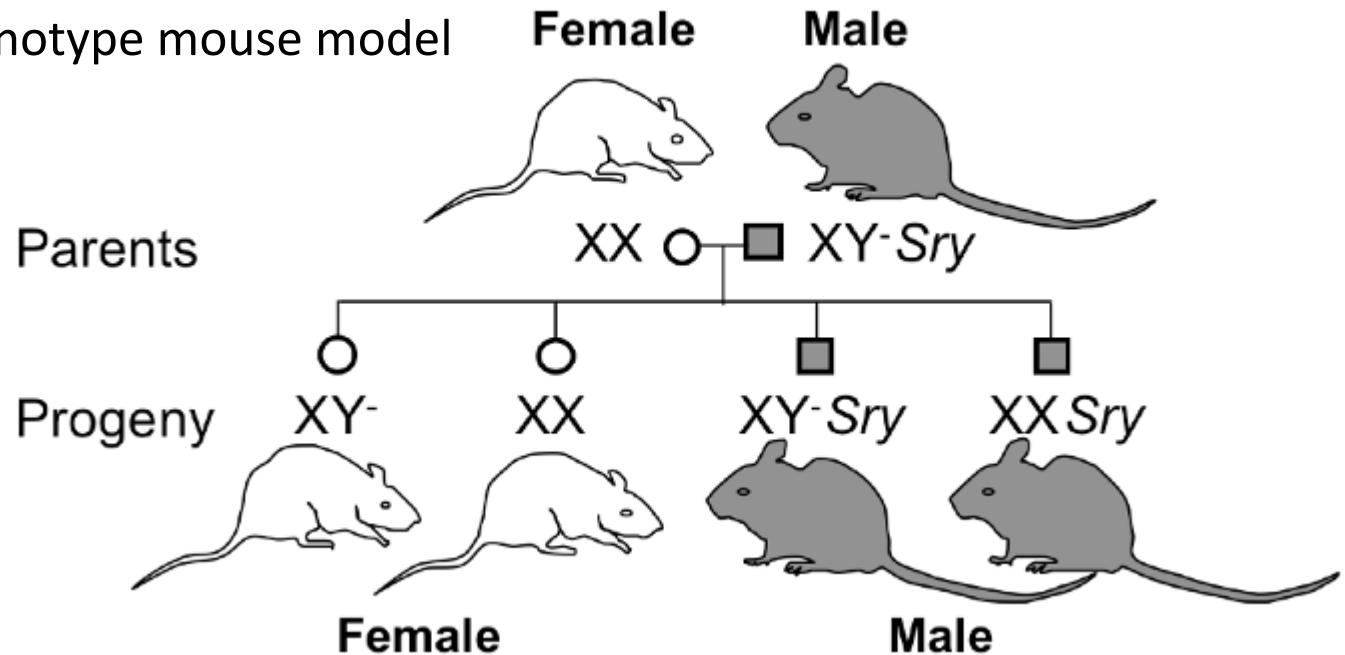
Differences

- symptoms
- reactions to pharmaceuticals
- prevalence of diseases

BUT also a bunch of similarities

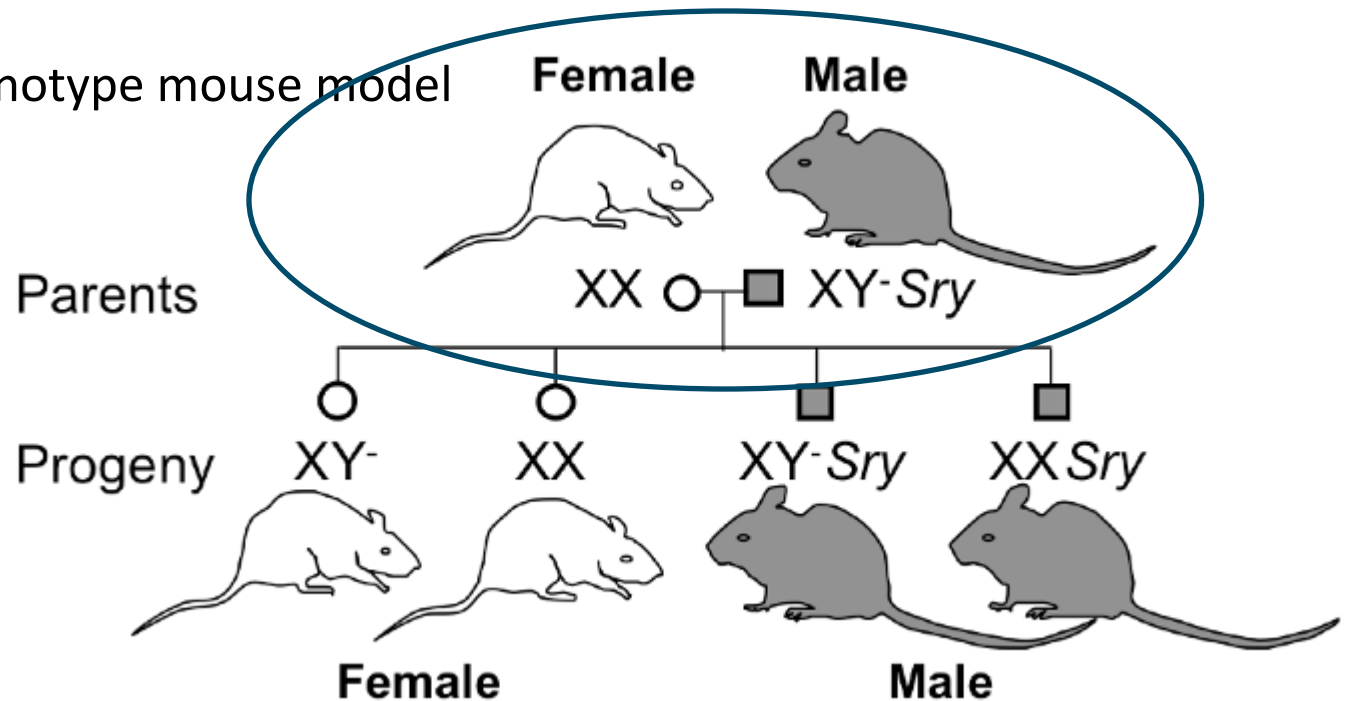
Research on sex

- Four core genotype mouse model



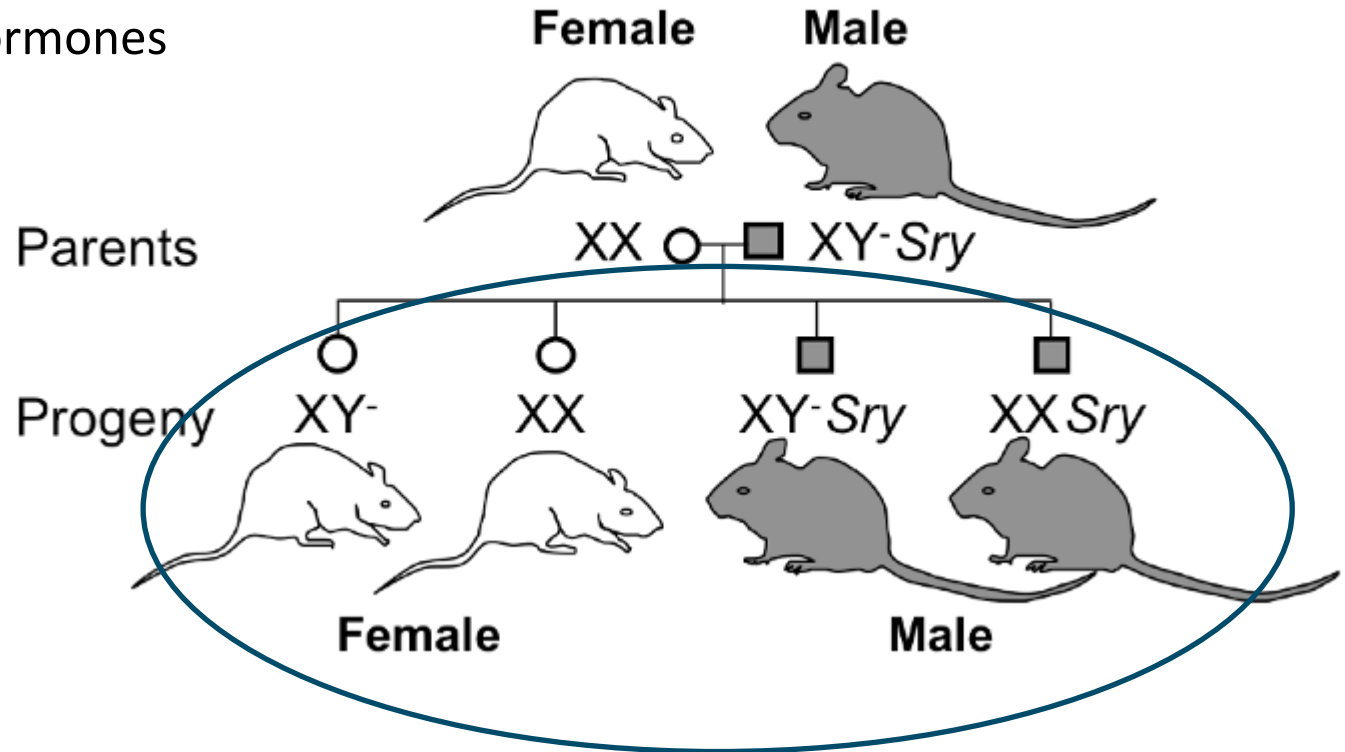
Research on sex

- Four core genotype mouse model



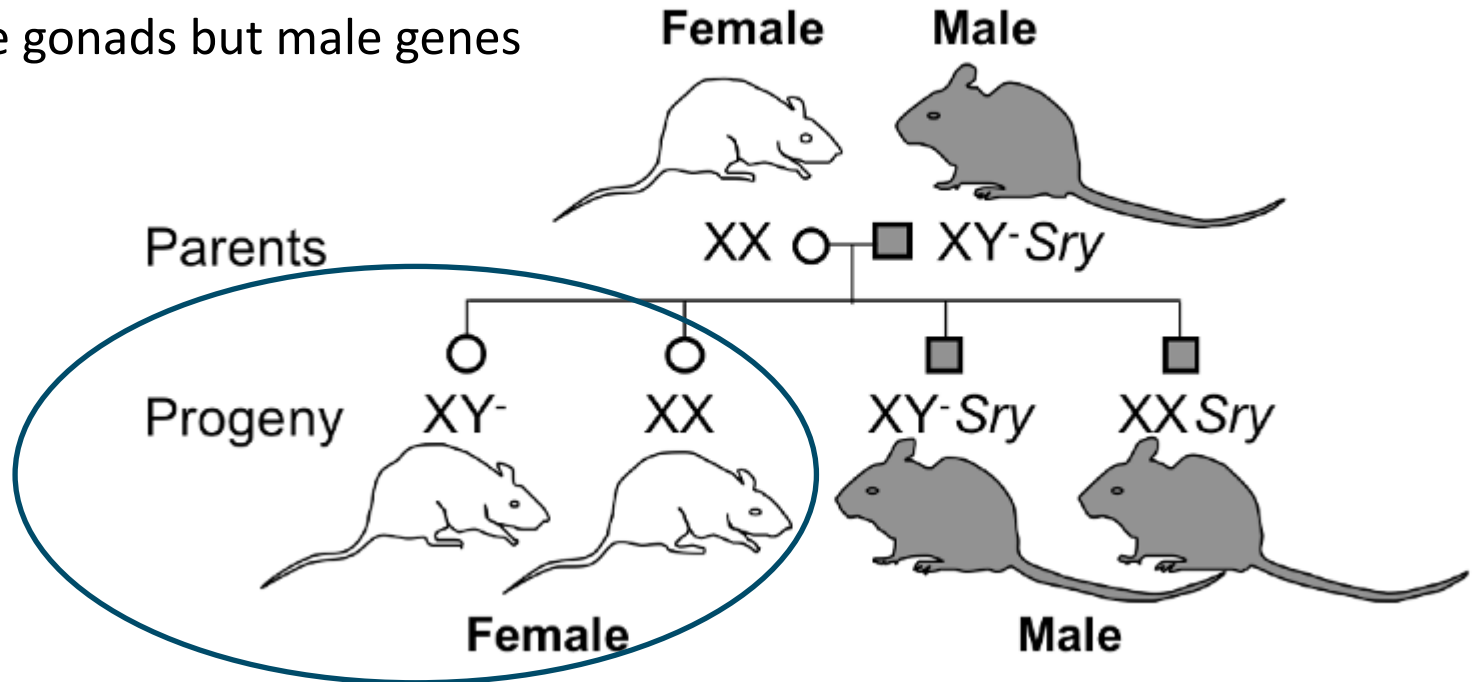
Research on sex

- Genes vs. Hormones



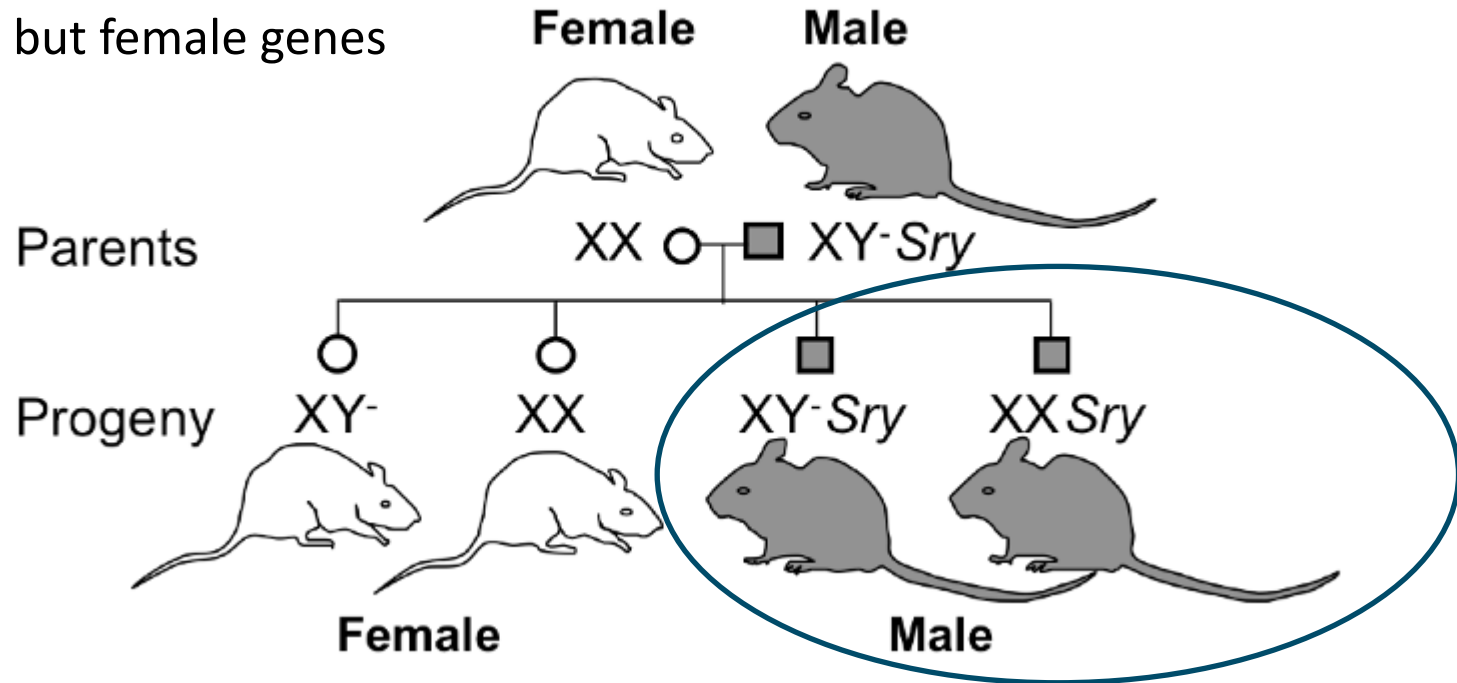
Research on sex

- Female gonads but male genes



Research on sex

- Male gonads but female genes



Results from basic research on rodents

Sex of the researcher

Pheromones (axillary steroids):

- menstrual cycle synchronization
- pain perception

Results from basic research on rodents

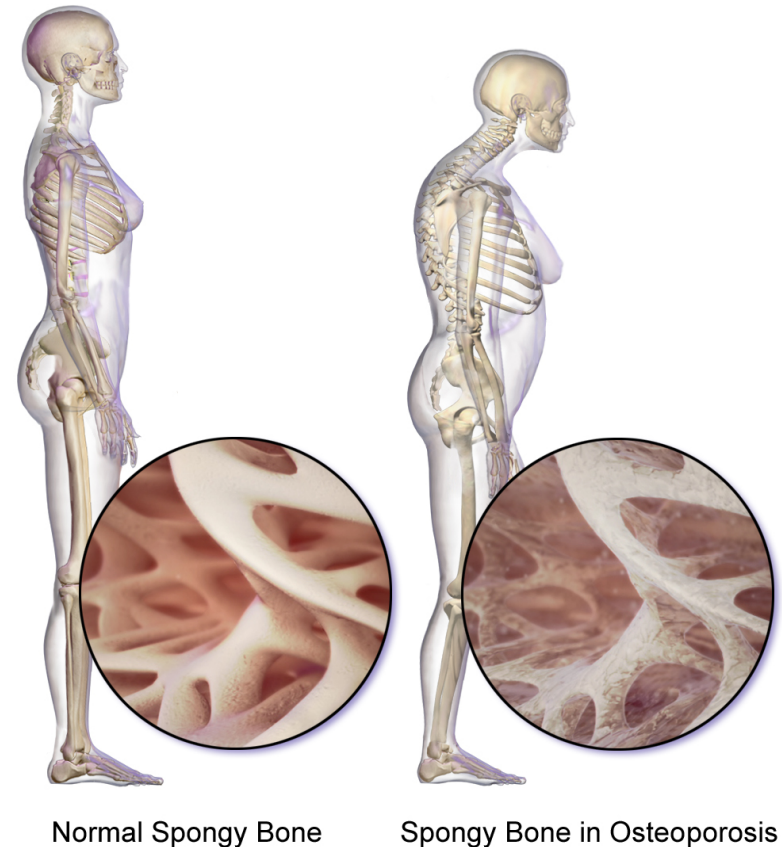
Sex of the researcher

“Exposure of mice and rats to male but not female experimenters produces pain inhibition.”

Osteoporosis

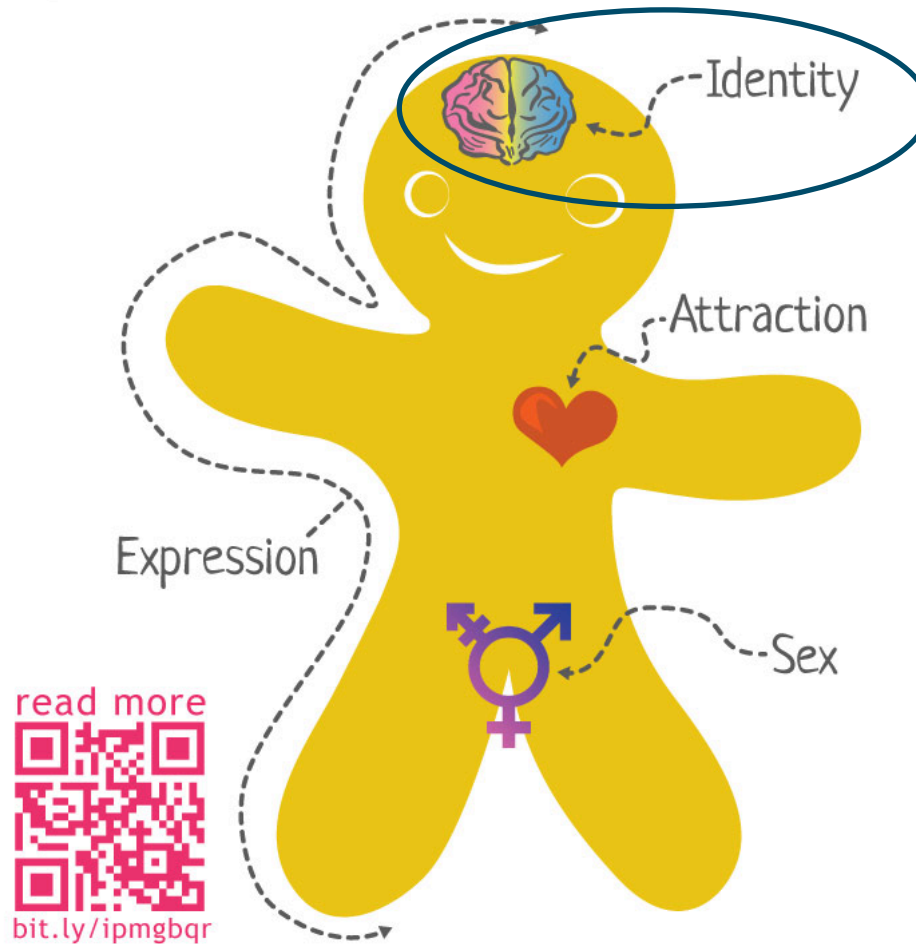
- underestimated in men
- later incidence
- higher mortality in case of fracture

Effects of Osteoporosis

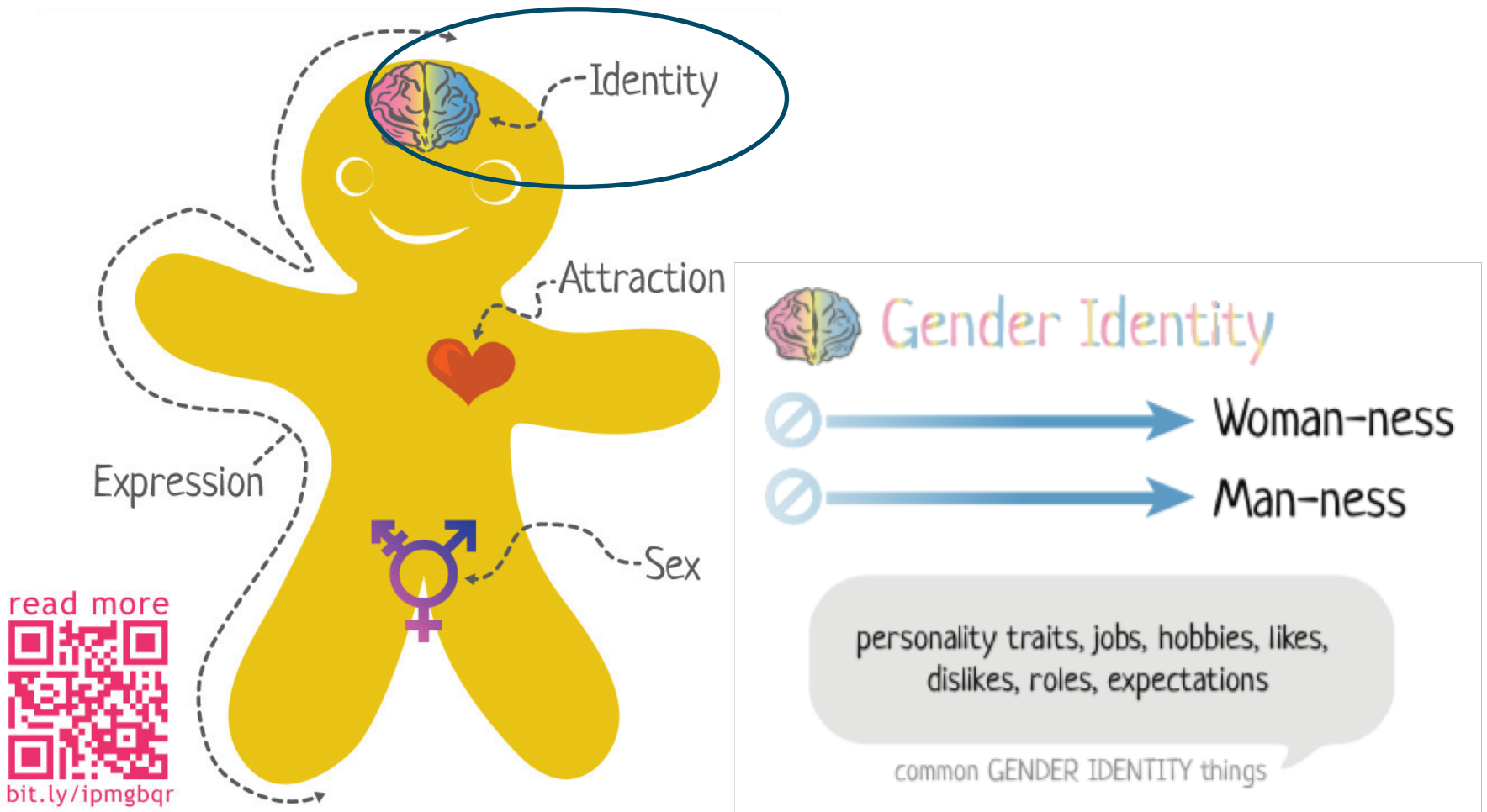


Rieder & Lohff 2008

Gender identity



Sarah as a Genderbread Person

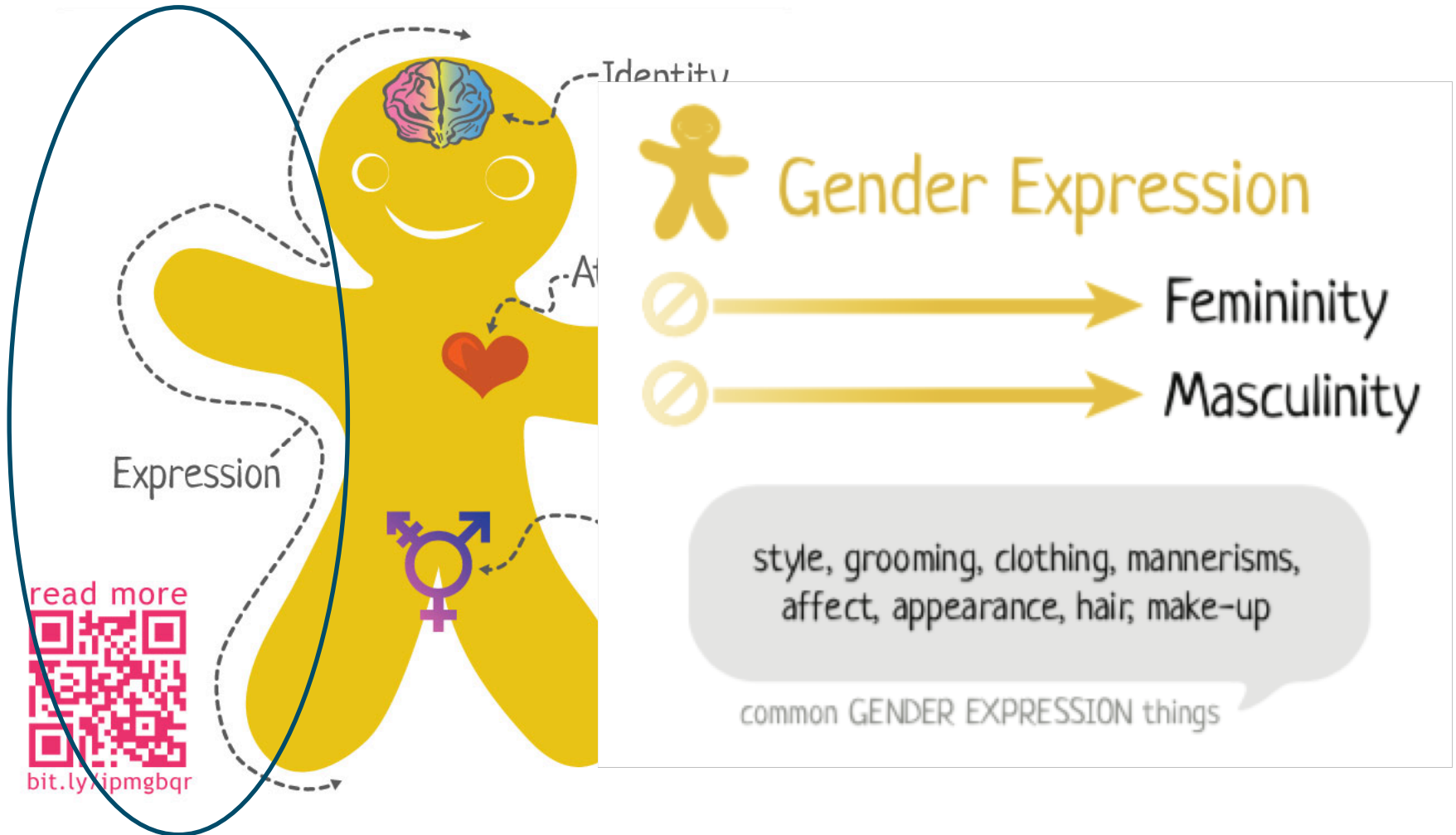


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Sarah as a Genderbread Person



Influences of gender

Assumptions on susceptibility of diseases

Examples:

- erectile dysfunction
- depression

Influences of gender

- assumptions on susceptibility of diseases
- interaction with doctors
 - description of symptoms
 - compliance with taking medications
 - reception of patient

Influences of gender

- assumptions on susceptibility of diseases
- interaction with doctors
 - description of symptoms
 - compliance with taking medications
 - reception of patient

“**NORMS** are prescriptions for how men and women should behave, while **stereotypes** are generalizations about what men and women are like (Pleck, 1981, 1995).” (In: Mansfield – accentuation by Hiltner)

Depression

- Depression in form of anxiety
 - higher in women
- substance abuse to deal with depression
 - higher in men
- successful suicides – higher rates in men



Mansfield et al. (2003)

Depression

- Scales and measures
- Responsibilities
- Gender norms
- Symptoms vs. solutions



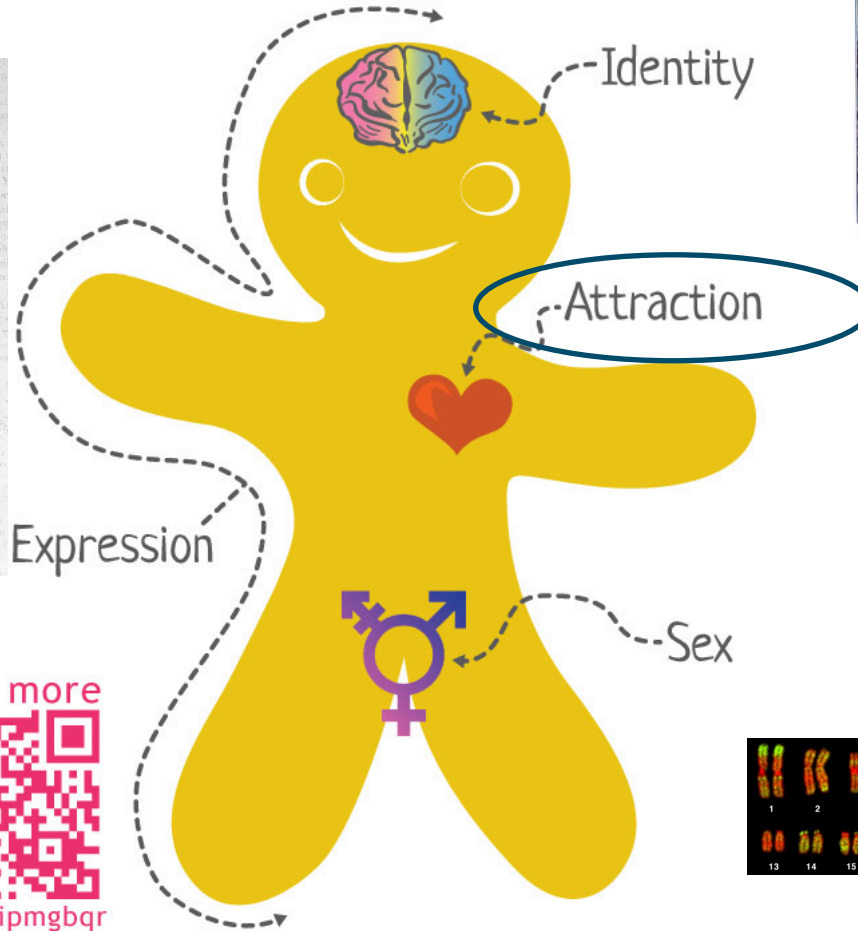
Mansfield et al. 2003

Credit: Wellcome Library, London. Wellcome Images images@wellcome.ac.uk <http://wellcomeimages.org> 'Suicidal melancholy' after a photograph by H. W. Diamond Lithograph By: W. Baggafter: Hugh Welch Diamond The Medical Times and Gazette Published: Jan 2 to June 26 1858

Attraction

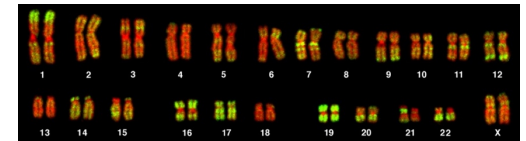


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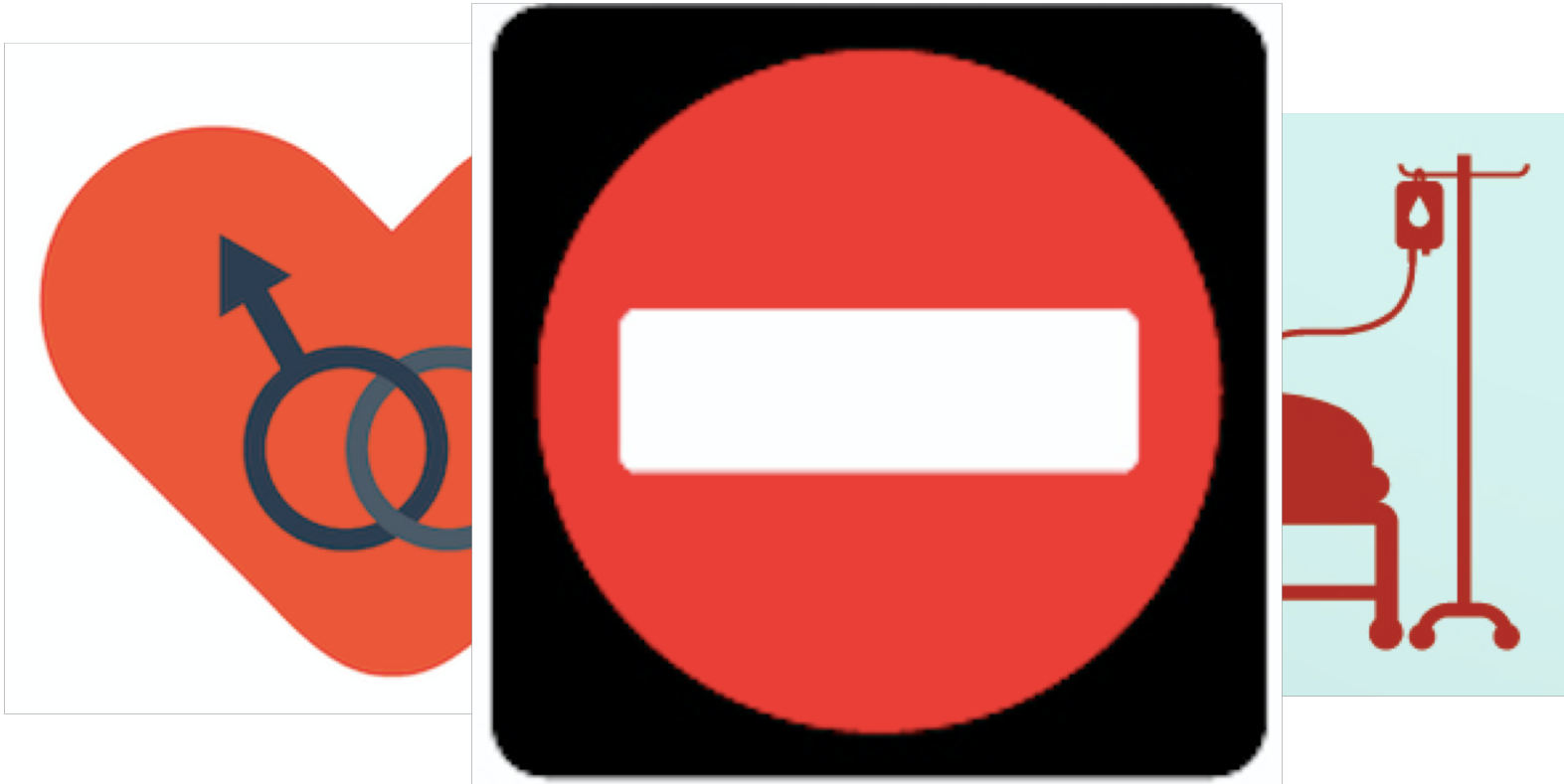
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Attraction

- homosexuality
- bisexuality
- pansexuality
- asexuality

Attraction

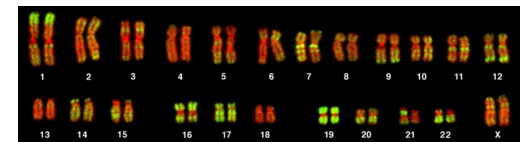
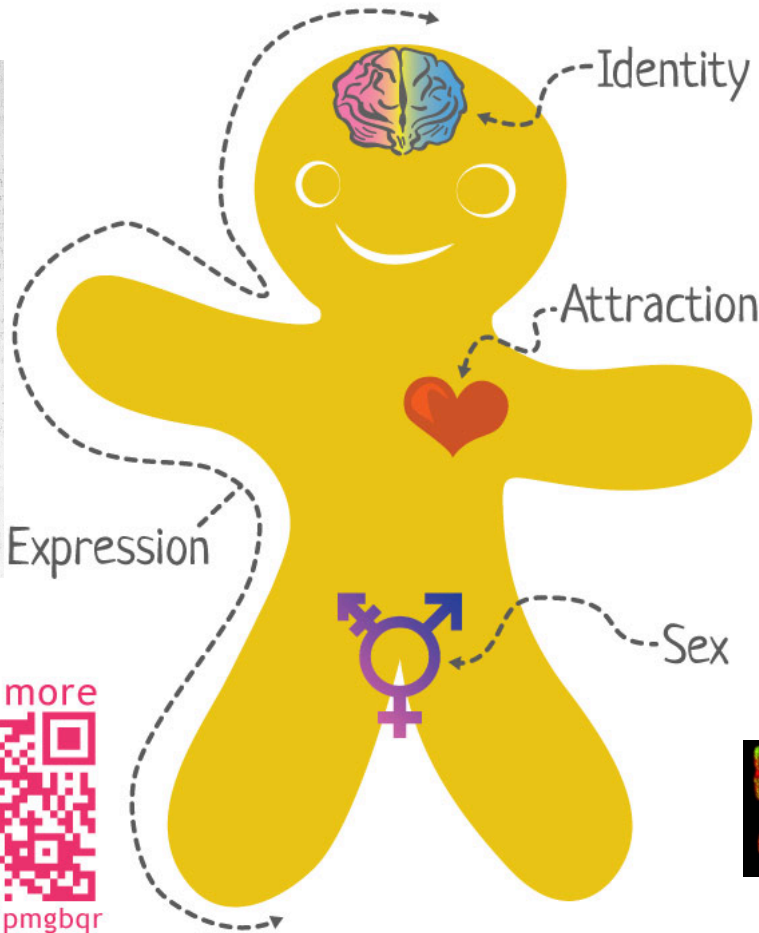


<https://www.freepik.com/free-photos-vectors/people>>People vector created by Freepik

https://www.freepik.com/free-vector/non-traditional-family-icons-set-flat_1538492.htm>Designed by Macrovector

https://www.freepik.com/free-vector/prohibition-signs_893277.htm>Designed by Olga_spb

Sex and Gender – big difference



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By Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. *PLoS Biol* 3(5): e157 DOI:10.1371/journal.pbio.0030157, Figure 7a, <https://commons.wikimedia.org/w/index.php?curid=1371900>

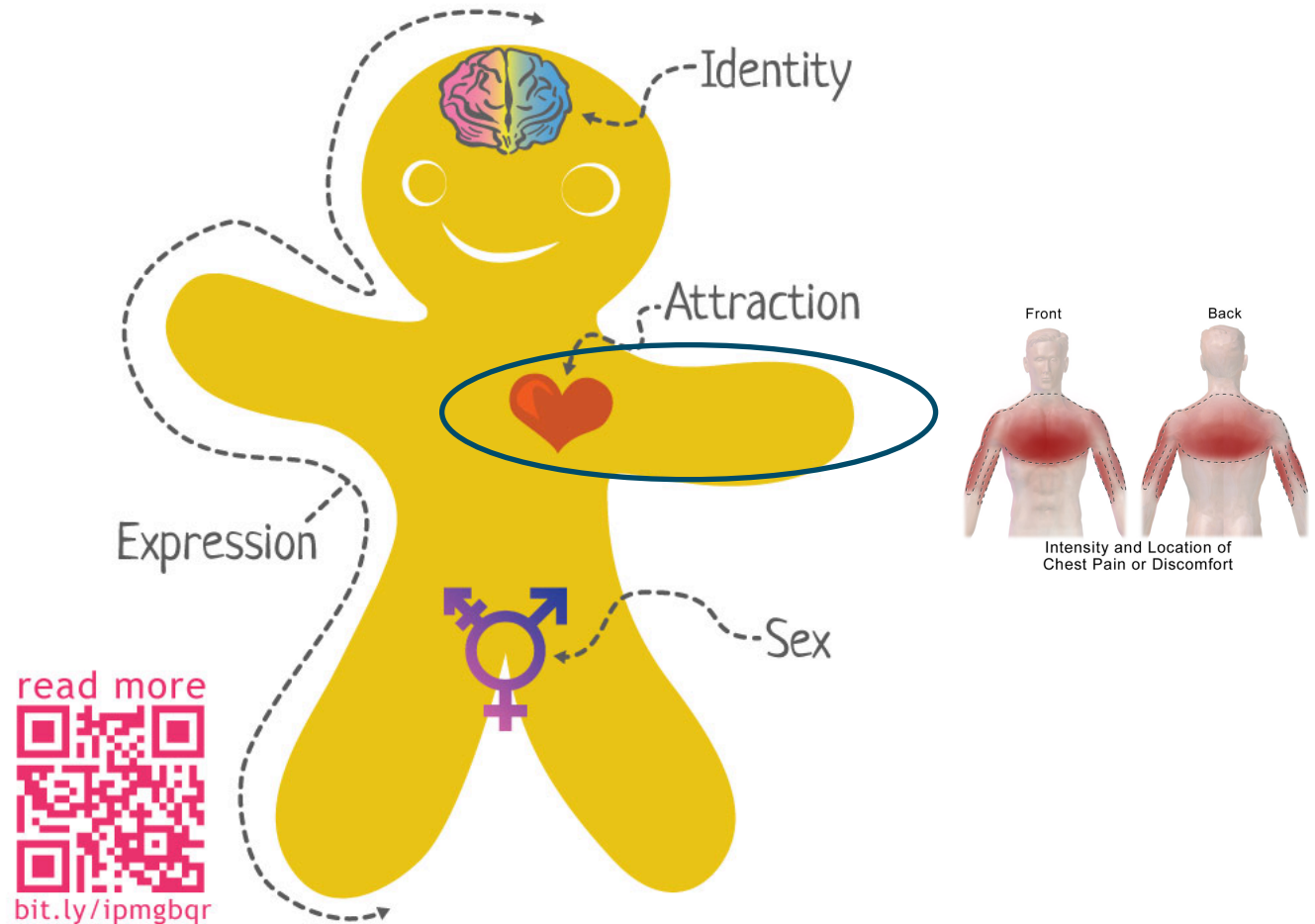
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Heart attack



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By Bolzer et al., (2005) Three-Dimensional Maps of All Chromosomes in Human Male Fibroblast Nuclei and Prometaphase Rosettes. *PLoS Biol* 3(5): e157 DOI:10.1371/journal.pbio.0030157, Figure 7a, <https://commons.wikimedia.org/w/index.php?curid=1371900>

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Part II

Hacking the medical system

Sarah Hiltner
18-12-2018

Exercise break: Breathing exercise

Sarah Hiltner
18-12-2018

Heart attack differences

1. symptoms
2. awareness
3. acknowledgement
4. therapy

Sarah Hiltner

18-12-2018

Heart attack differences

1. symptoms

2. awareness

3. acknowledgement

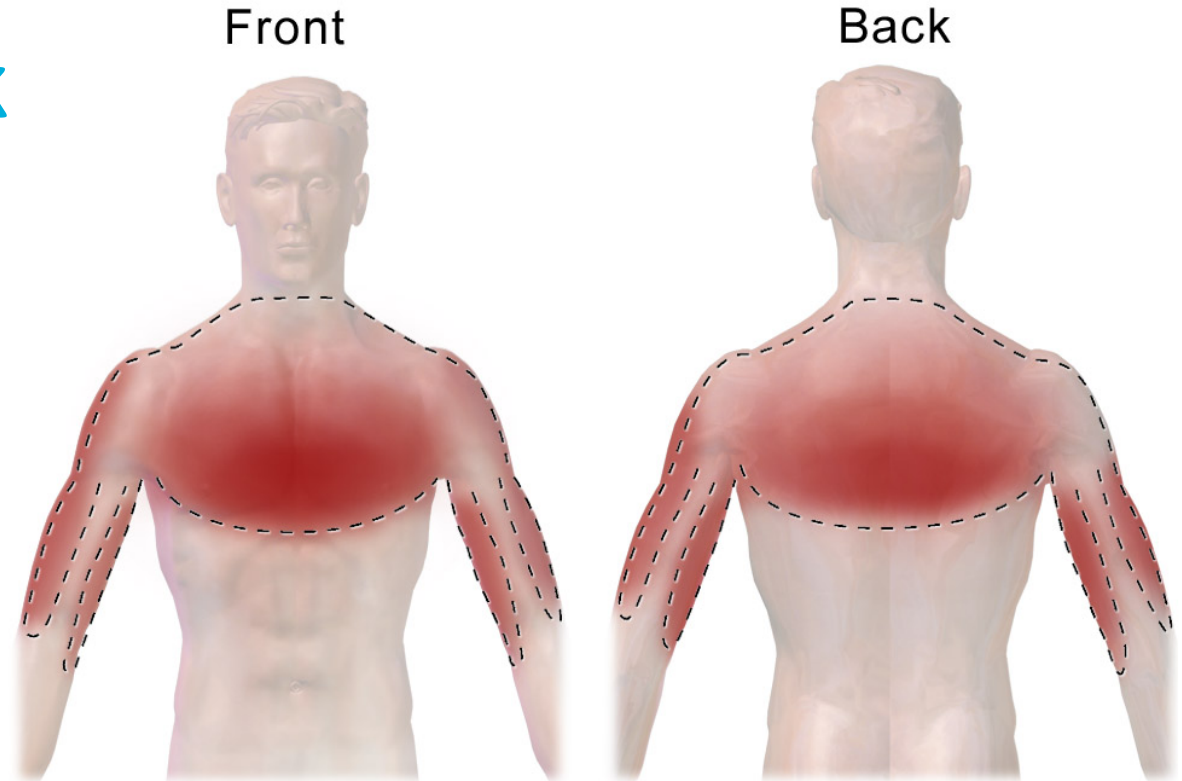
4. therapy

Sarah Hiltner

18-12-2018

Heart attack

- chest pain
- pain in the left side of the body
- cold sweat



Intensity and Location of Chest Pain or Discomfort

Image: by BruceBlaus [CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>)], from Wikimedia Commons

Legato, Marianne J., and John P. Bilezikian. Principles of gender-specific medicine. Vol. 2. Gulf Professional Publishing, 2004.

Heart attack in most women

- weakness
- shortness of breath
- back pain
- nausea



Heart attack differences

1. symptoms

2. awareness

3. acknowledgement

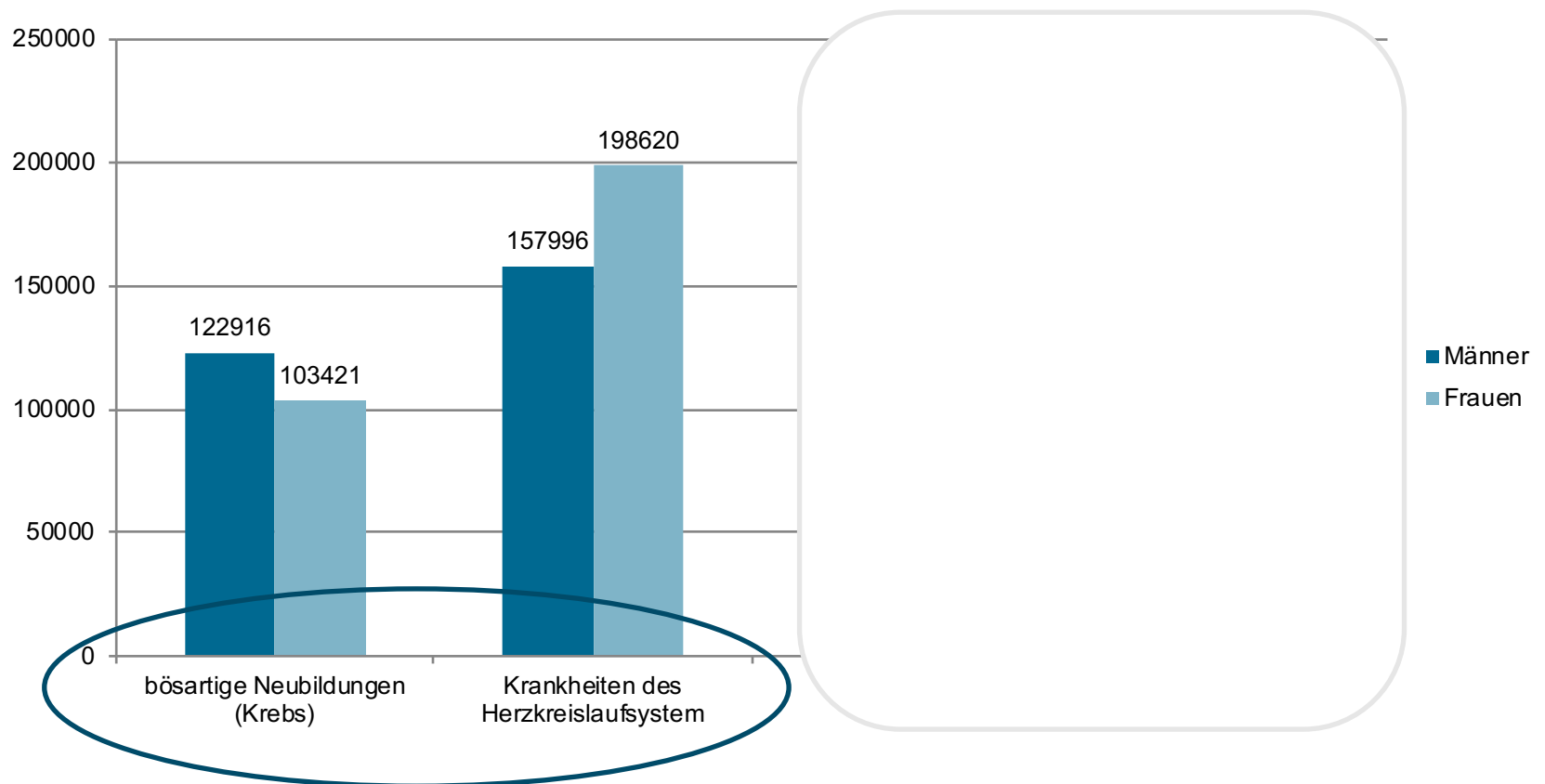
4. therapy

Sarah Hiltner

18-12-2018

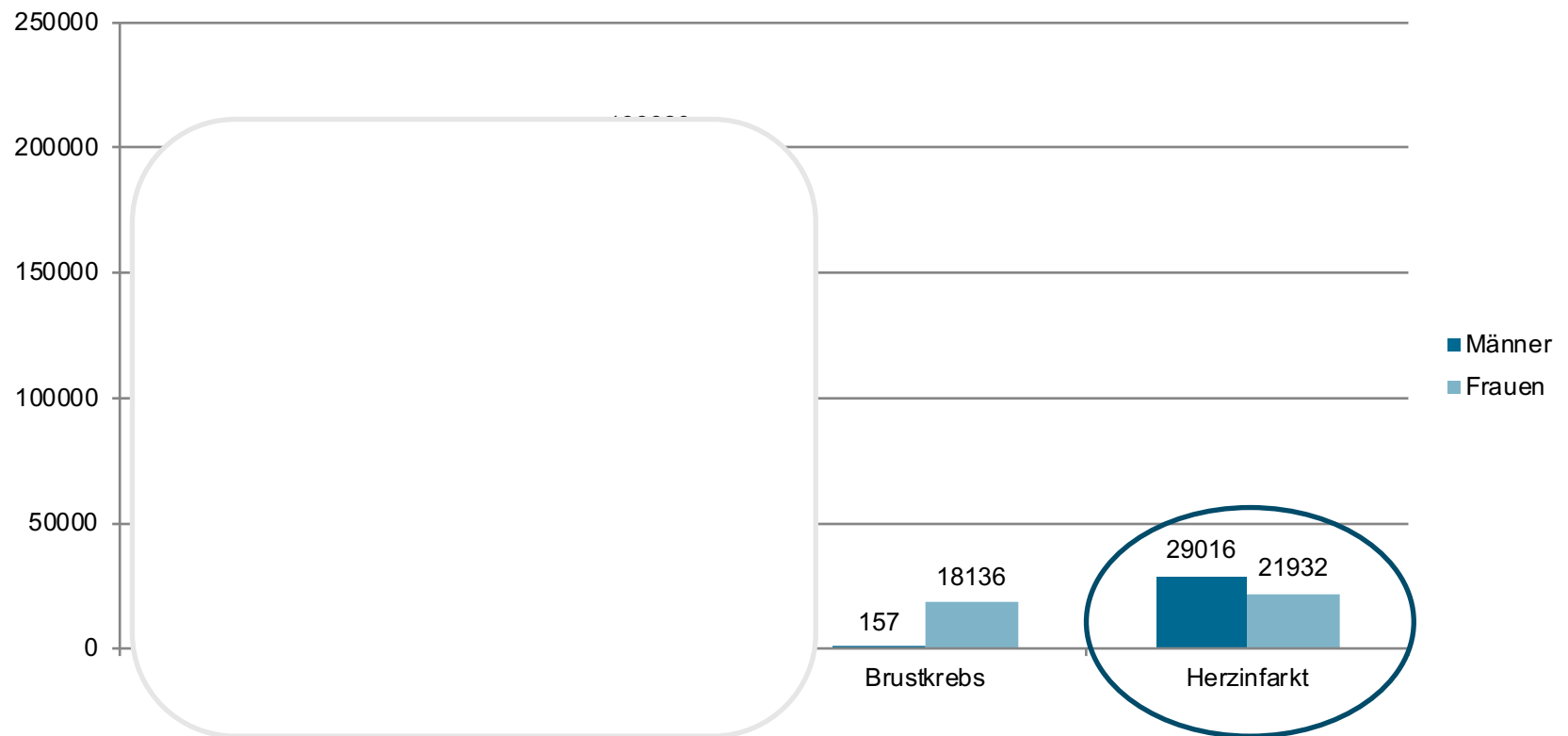
Cause of death

Death by disease in Germany (based on year: 2015)



Cause of death

Death by disease in Germany (based on year: 2015)



Heart attack differences

1. symptoms

2. awareness

3. acknowledgement

4. therapy

Sarah Hiltner

18-12-2018

Excercise break: Breathing excercise

Sarah Hiltner
18-12-2018

Heart attack differences

1. symptoms

2. awareness

3. acknowledgement

4. therapy

Sarah Hiltner

18-12-2018

Therapy and Prevention

Aspirin/ASS:

protects men of re-infarction;

protects women of strokes

If we know all this – why do we need to talk about it?

Sarah Hiltner
18-12-2018

Bias in medical textbooks

1. androcentrism
2. gender insensitivity
3. double standard

Sarah Hiltner

18-12-2018

Bias in medical textbooks

1. androcentrism

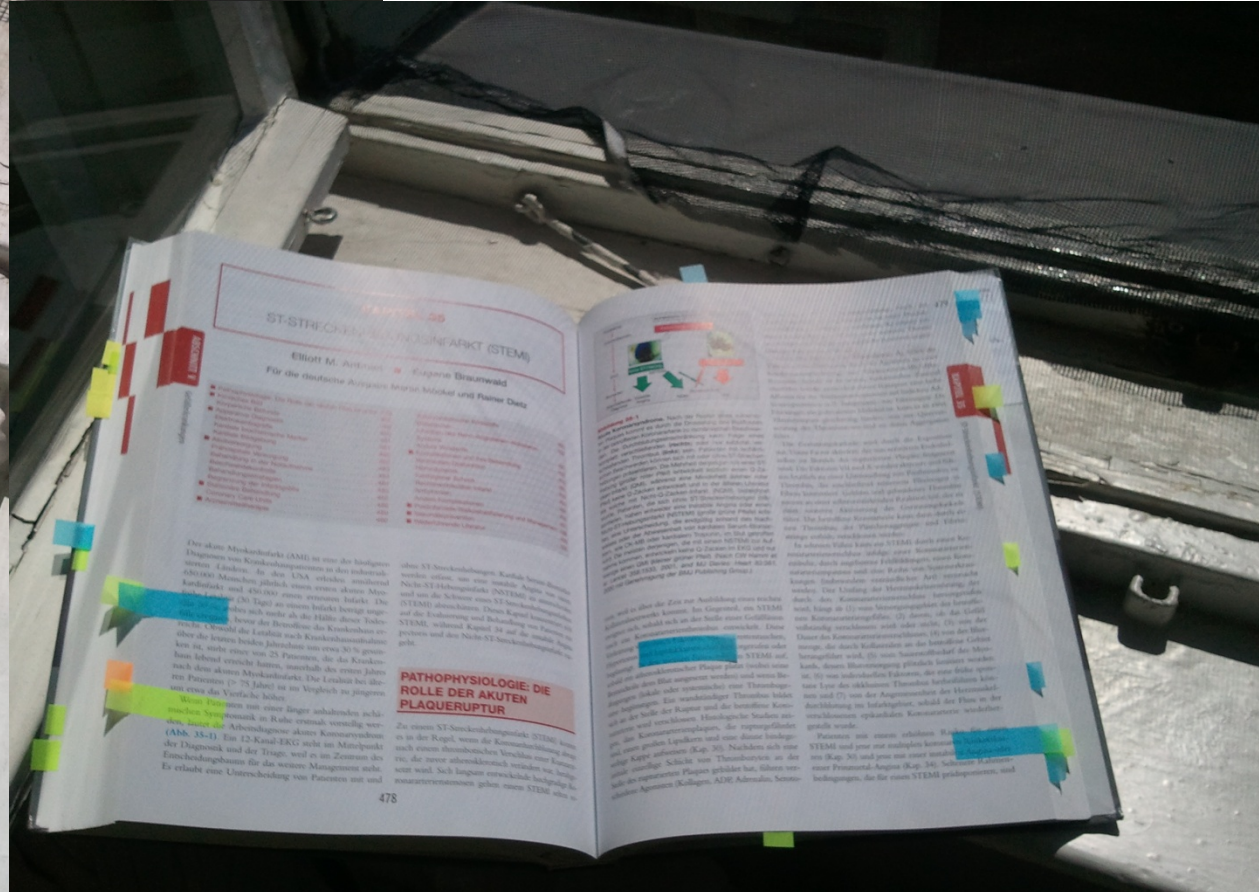
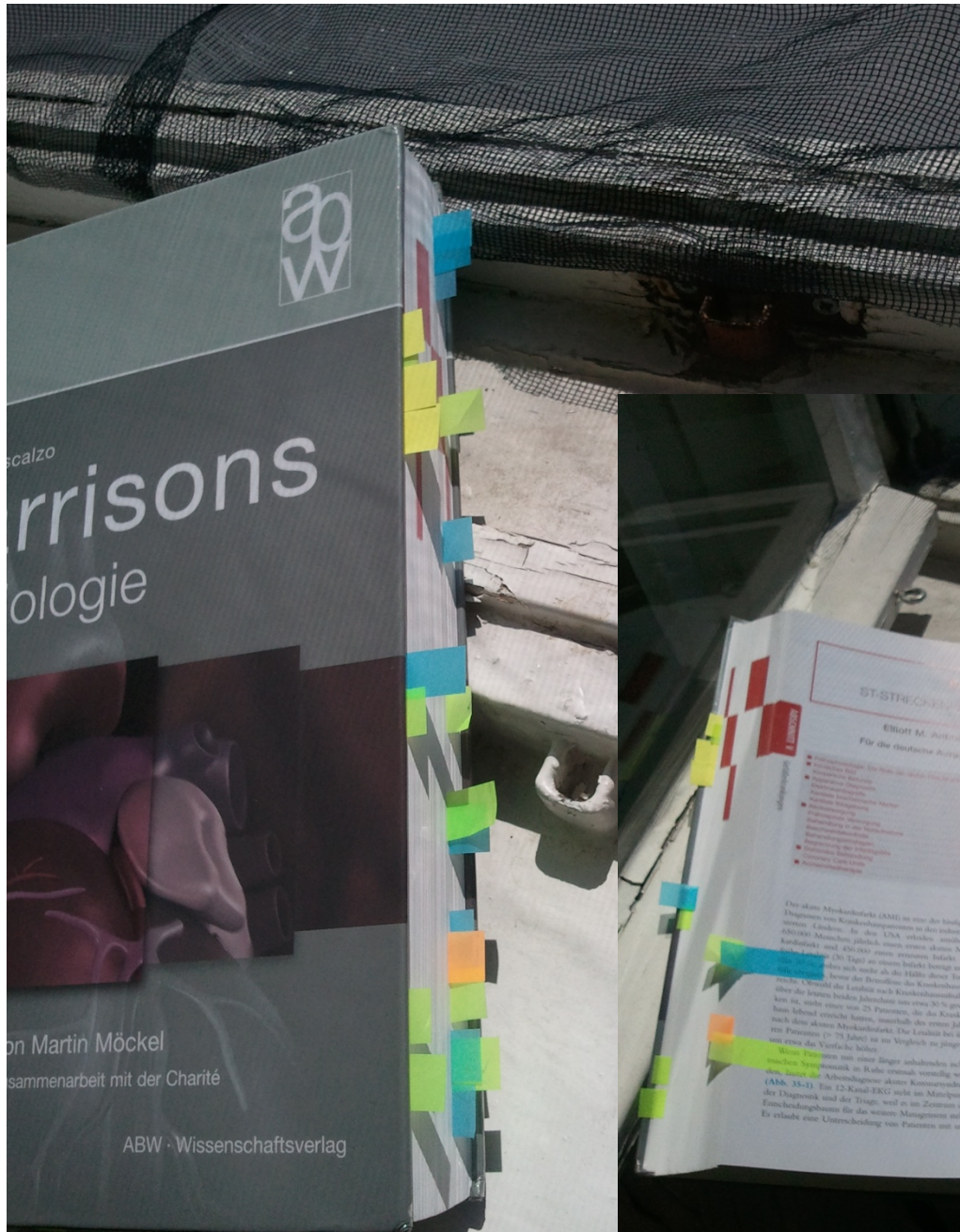
2. gender insensitivity

3. double standard

Sarah Hiltner

18-12-2018

Replication

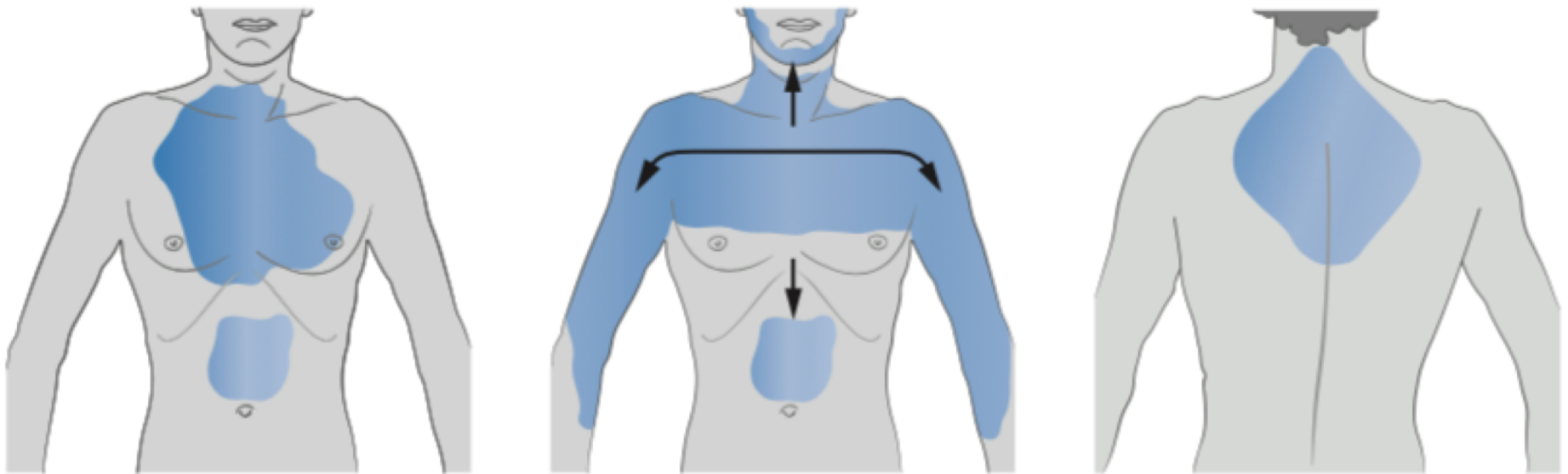


ST-STRECKEN (STRECKEN) (STEM)	
Etiologie M. A. Braunwald	
Für die detaillierte Anamnese lesen Sie Kapitel 10 und 11 sowie 12	
1. Anamnese	2. Körperliche Untersuchung
3. Diagnostik	4. Differentialdiagnose
5. Therapie	6. Prognose

PATHOPHYSIOLOGIE: DIE ROLLE DER AKUTEN PLAQUERUPTUR

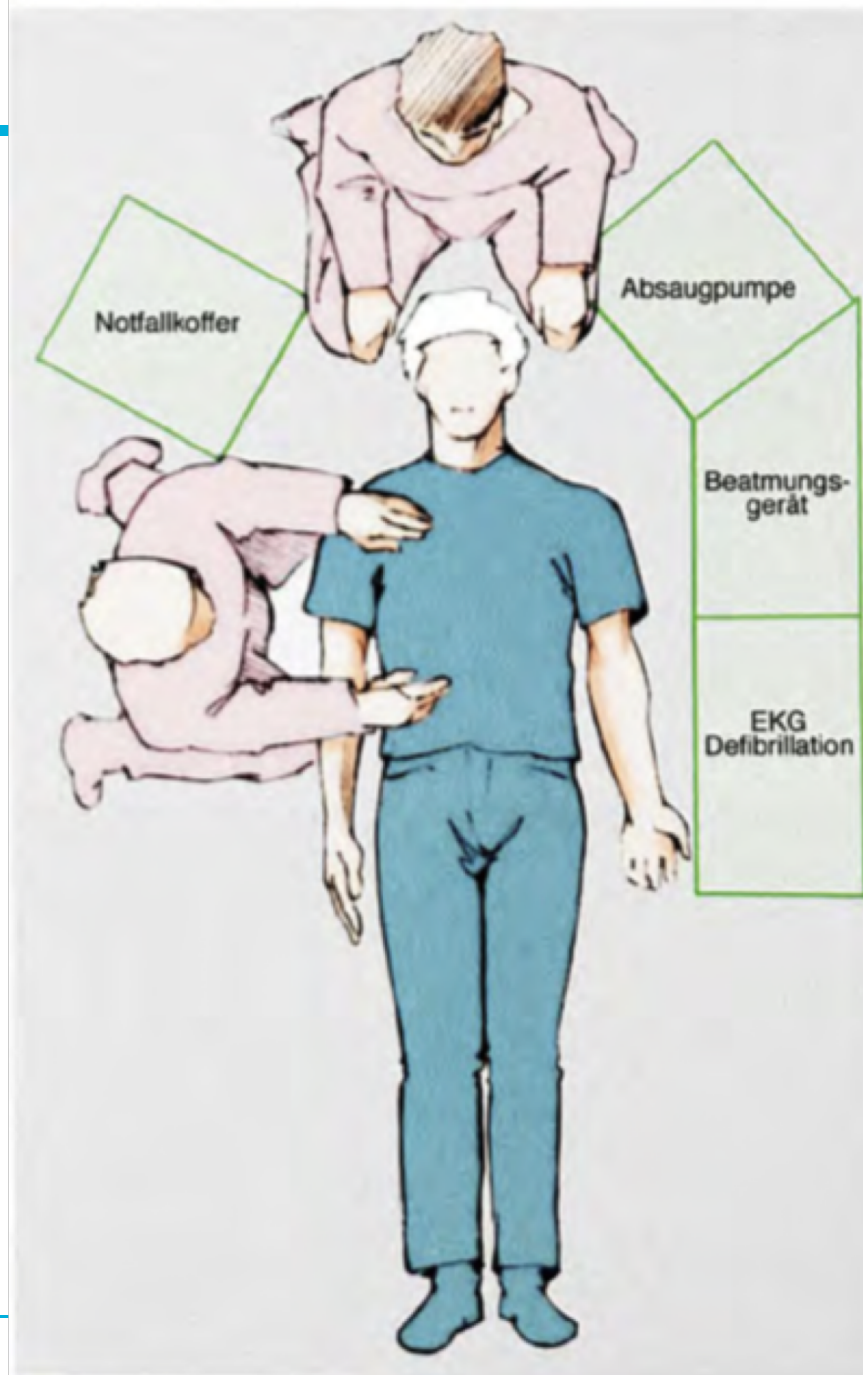
Zu einem ST-Streckenherzinfarkt (STEMI) kommt es in der Regel, wenn die Koronararterien durch einen thrombotischen Verschluss einer Koronararterie (meist der linken oder rechten Herzkammerarterie) akut verschlossen werden. Die betroffenen Koronararterien sind normalerweise durch eine Schicht von Thrombozyten und Fibrin verstopft, die sich bei einer Ruptur bilden. Die Ruptur führt zu einer akuten Verschlechterung der Durchblutung des Myokards, was zu einer Myokardnekrose führt. Die Myokardnekrose ist ein irreversibler Schaden, der zu einer dauerhaften Beeinträchtigung der Herzfunktion führt.

Pictures



Mathes (2012) S. 86

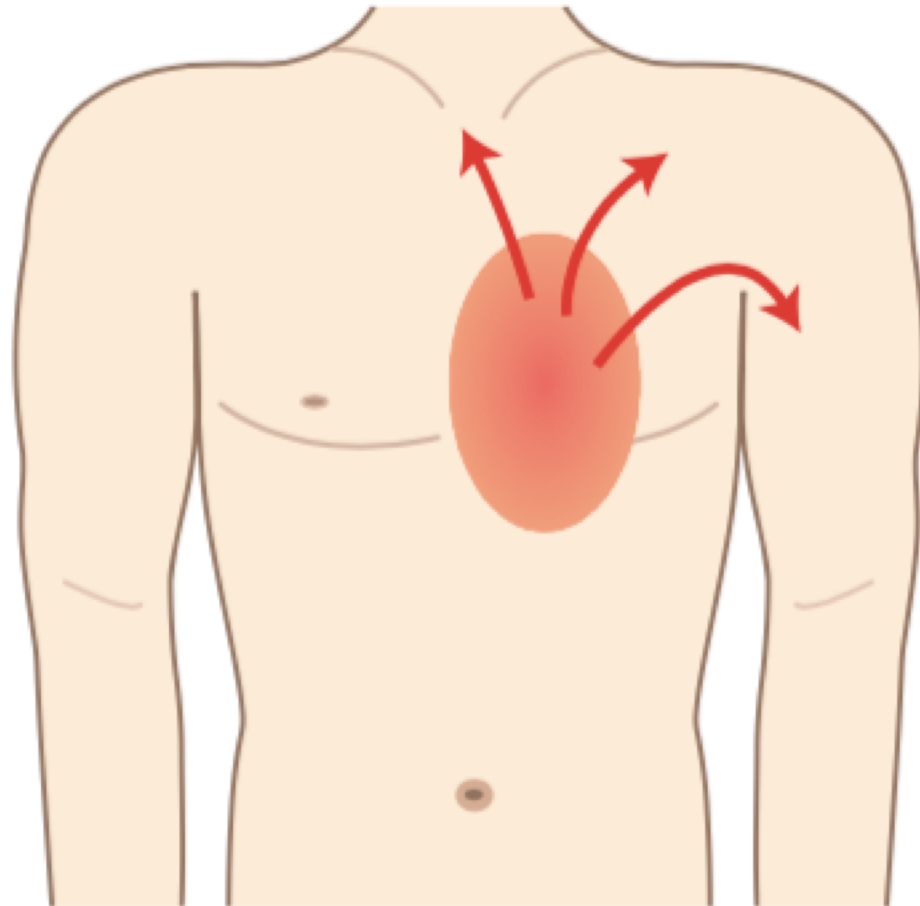
Pictures



Lederhuber, Lange &
Deisenhofer (2010) S. 146

■ Abb. 2: Advanced Life Support. [13]

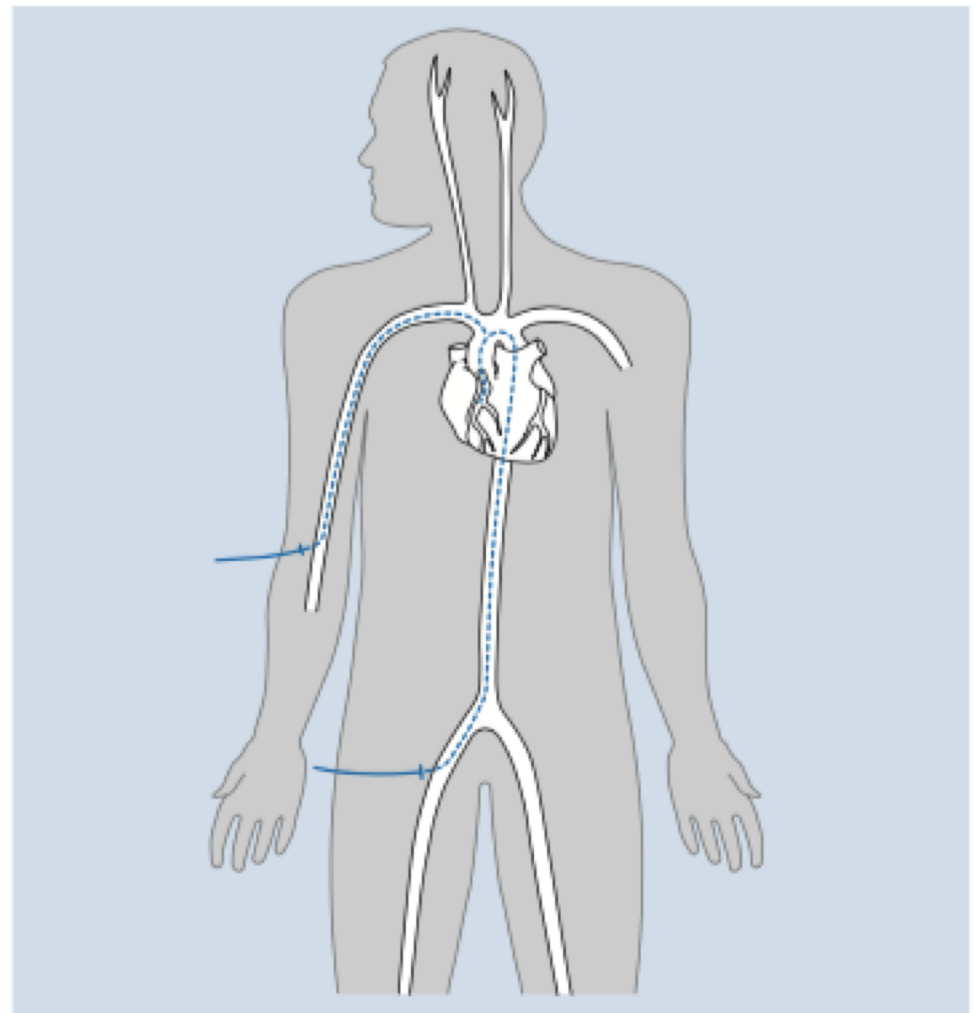
Pictures



Steffel & Lüscher (2011) S. 48

■ Abb. 6.3. Lokalisation und Ausstrahlung typischer pektanginöser Beschwerden

Pictures



■ **Koronarangiographie (Herzkatheteruntersuchung):** Bei der Koronarangiographie wird ein dünner Katheter (Kunststoffschlauch von 2,5 Millimetern Durchmesser) über die Arterie in der Leiste (oder im Arm) bis zum Herzen vorgeführt. Die gestrichelte Linie zeigt den Verlauf des Katheters im Gefäß. Dann wird Kontrastmittel eingespritzt, um das ganze Herz in seiner Bewegung zu zeigen und damit Auskunft über Größe und Auswirkungen des Infarktes zu erhalten. Außerdem wird Kontrastmittel in die Herzkranzgefäße eingebracht, um eine genaue Darstellung der Engstellen und Verschlüsse zu ermöglichen.

Mathes (2012) S. 79

Pictures

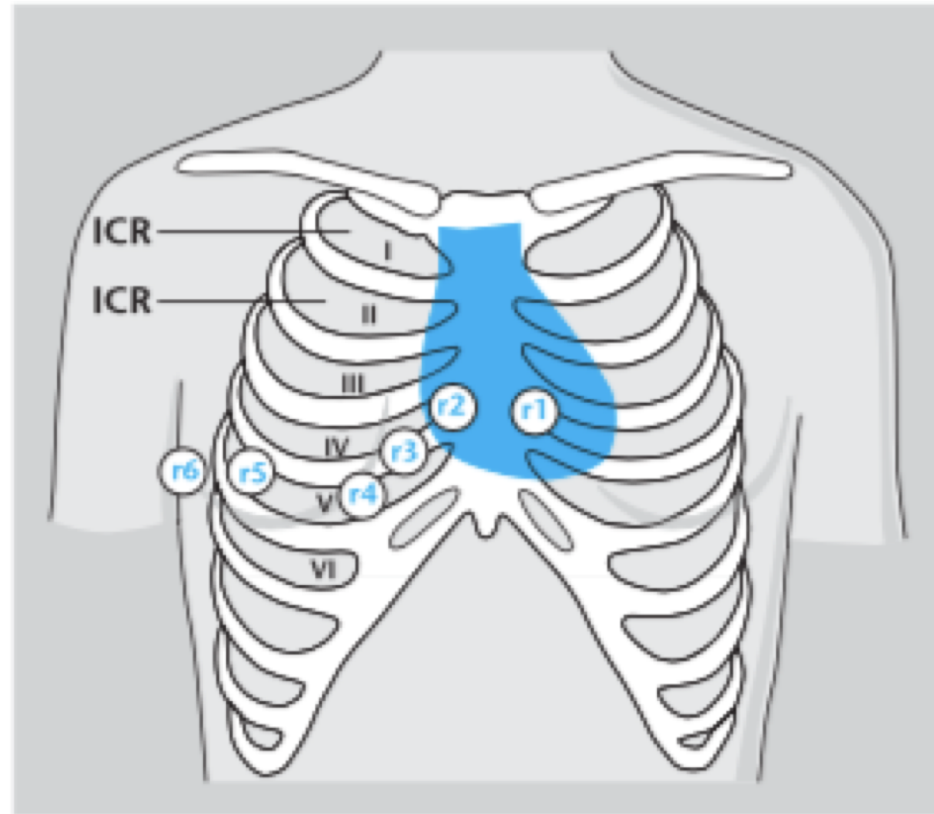
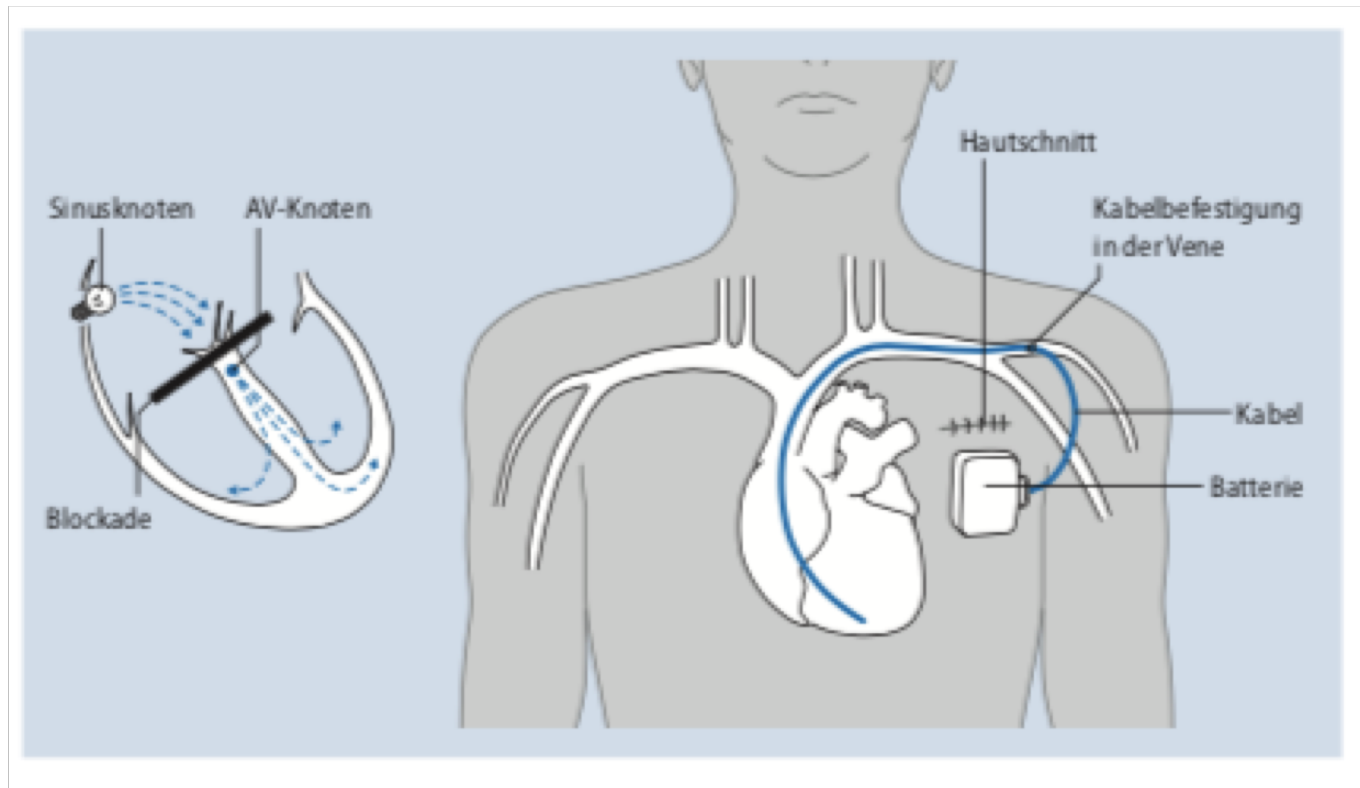


Abb. 4.09 EKG-Elektrodenposition bei Rechtsherzableitung [A300-157]

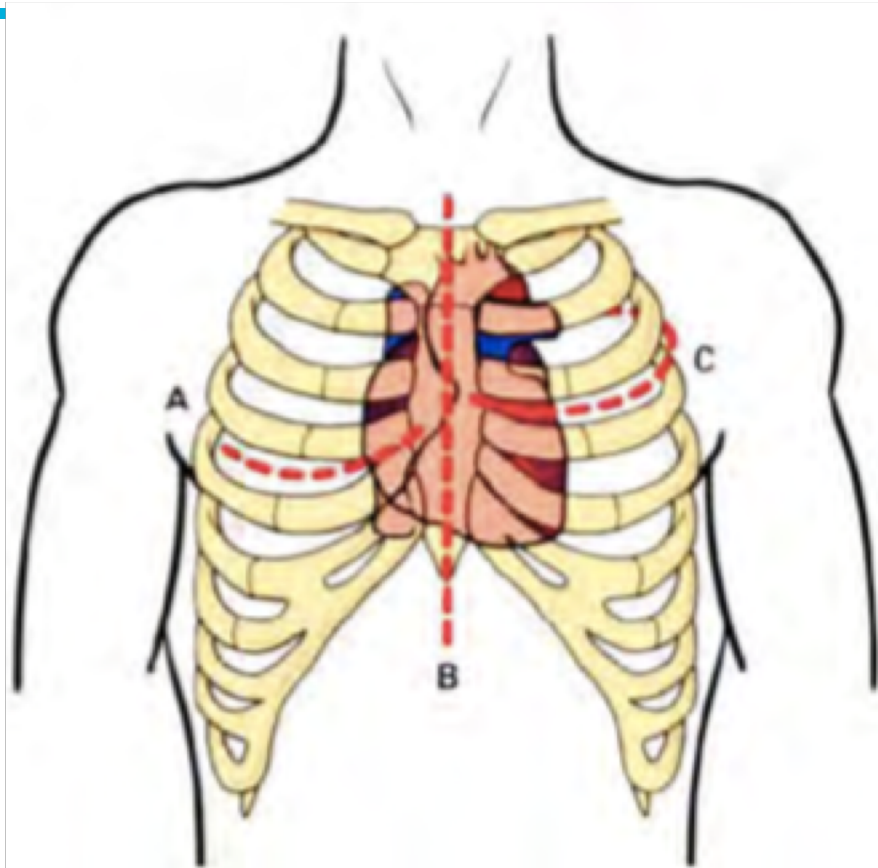
Stierle & Hartmann (2008) S. 179

Pictures



Mathes (2012) S. 121

Pictures



■ Abb. 1: Zugangswege zum Herzen bei Herz-OPs:
A = rechtsseitige anterolaterale Thorakotomie,
B = mediane Längssternotomie, C = linksseitige
posterolaterale Thorakotomie. [5]

Lederhuber, Lange &
Deisenhofer (2010) S. 43

Pictures



Mathes (2012) S. 124

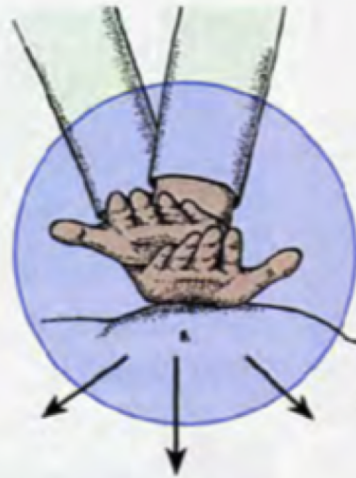
Pictures



▣ **Pulskontrolle an der Halsschlagader**

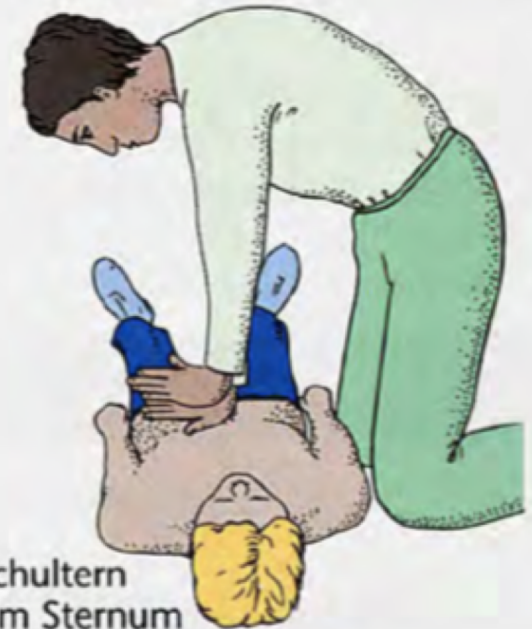
Mathes (2012) S. 137

Pictures



Nur der Handballen
berührt das Sternum

Arme gestreckt, Schultern
senkrecht über dem Sternum



■ Abb. 1: Kardiopulmonale Reanimation. [13]

Lederhuber, Lange &
Deisenhofer (2010) S. 144

Bias in medical textbooks

1. androcentrism

2. gender insensitivity

3. double standard

Sarah Hiltner

18-12-2018

Results

Besondere Patientengruppen

Bestimmte ACS-Patienten haben ein erhöhtes Risiko für kardiale Ereignisse und benötigen eine besondere Behandlungsstrategie. Diese Subgruppen sind z. B. ältere Patienten, Frauen, Patienten mit Nierenfunktions-einschränkungen, Diabetes mellitus und Anämie.

Ältere Patienten (> 75 J.) zeigen des Öfteren atypische Symptome, daher sollte eine Abklärung bereits bei geringerem Verdacht als bei jüngeren Patienten erfolgen (I C). Älteren Patienten sollte eine invasive Diagnostik nicht vorenthalten werden (I B).

Bei **Frauen** tritt ein ACS im Schnitt 10 Jahre später als bei Männern auf, daher sind sie bei Präsentation älter und haben oft mehr Begleiterkrankungen. Dies ist bei der Indikation zu einem invasiven Vorgehen sowie bei der Auswahl der Antikoagulation und Plättchenhemmung zu berücksichtigen. Grundsätzlich sollten das gleiche Vorgehen wie bei Männern gelten (I B).

Spes 2011, S. 13

Bias in medical textbooks

1. androcentrism
2. gender insensitivity
3. double standard

Sarah Hiltner

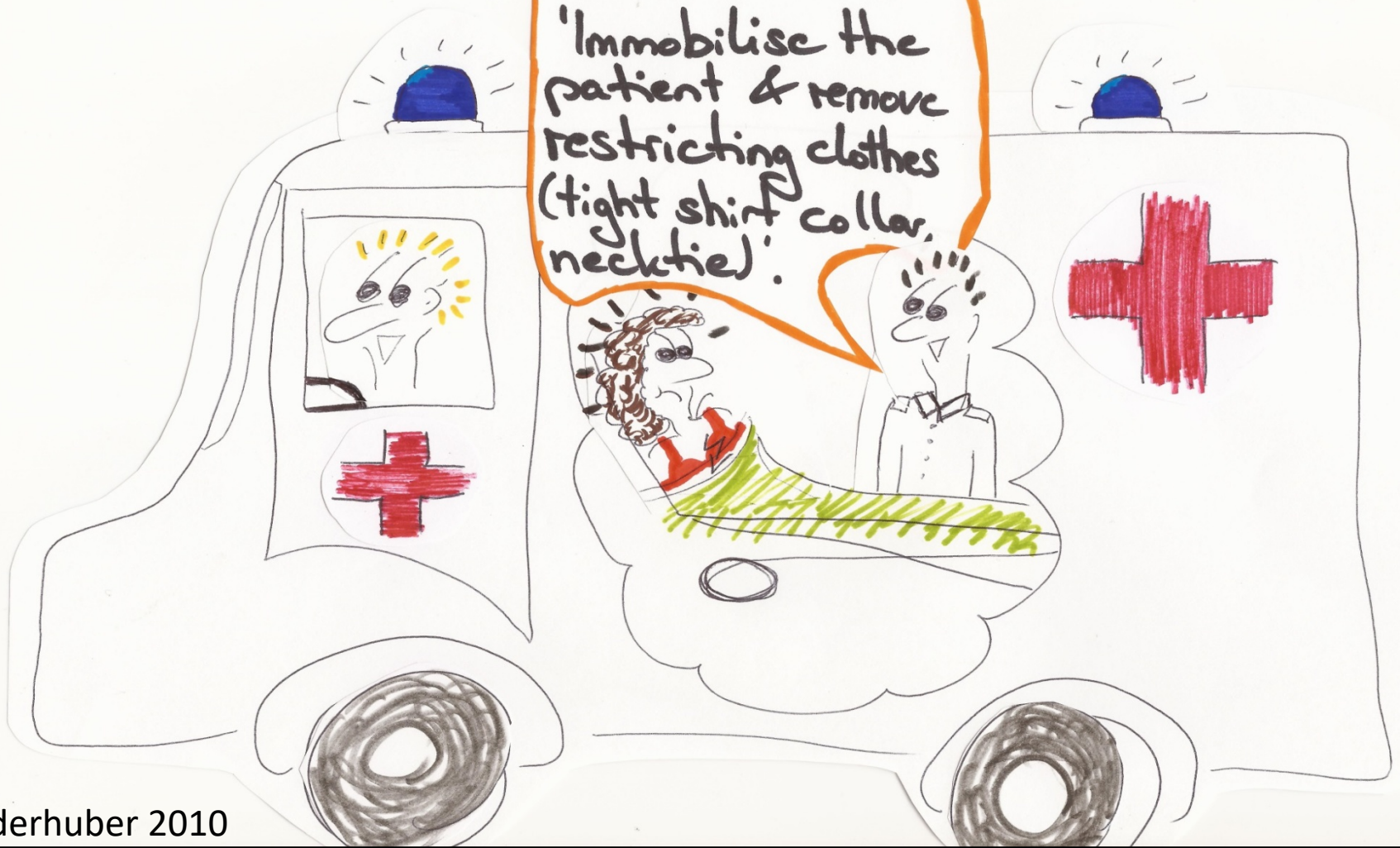
18-12-2018

Results

Eikosapentaensäure	186	Flugreisen	209
Einengung	71	Folgen	
Eingliederungshilfe	131	– seelische	195
Einzelschicksal	138	Formula-Diäten	164
EKG-Kontrolle	139	Frauen	
Elastizität	31	Früherkennung	31
Elektroden	121	Futterverwerter	41

Mathes (2012) S. 257

In case of a heart attack:
'Immobilise the patient & remove restricting clothes (tight shirt collar, necktie)'.



Results

1.1.7 Medikamentöse Interventionen zur Prävention

- ASS zur Primärprävention: Bei hohem KHK-Risiko (10-Jahres-Risiko $> 6\%$) ist die niedrig dosierte ASS-Therapie bei akzeptablem Nutzen-Risiko-Verhältnis vertretbar (KI beachten). Für Frauen nur ungenügende Daten für eine allgemeine Empfehlung vorhanden.

Stierle (2008) S. 12

Bias in medical textbooks

1. androcentrism
2. gender insensitivity
3. double standard

Sarah Hiltner

18-12-2018

GENDER AND THE GENOME
Volume 1, Number 2, 2017
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DOI: 10.1089/gg.2017.0003

ORIGINAL RESEARCH ARTICLE

Sex and Gender Representations of Myocardial Infarction in German Medical Books

Sarah Hiltner, MA,¹ and Sabine Oertelt-Prigione, MD, MScPH²

Abstract

Mandatory teaching of sex- and gender-specific medicine (SGSM) is an essential tool to prepare future physicians for clinical care. Textbooks still play an important role for physician training in Germany. They are one of the main sources of structured and validated information.

The present study was conducted to investigate the incorporation of SGSM knowledge about myocardial

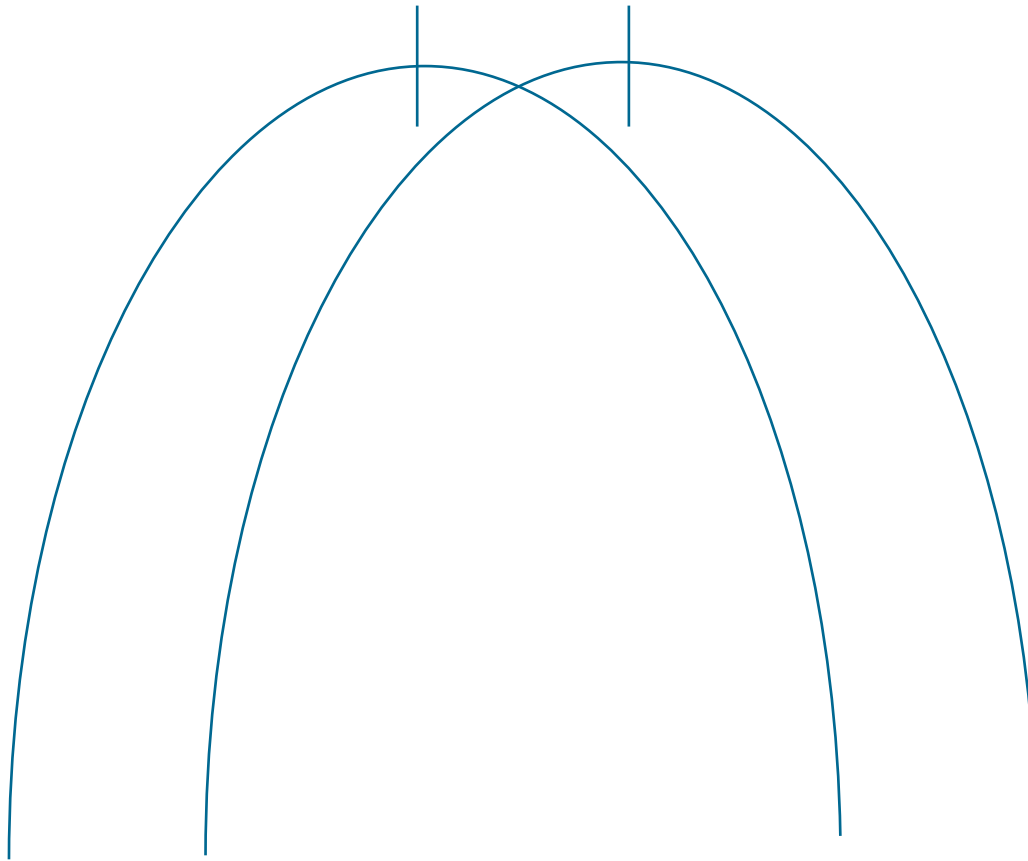
Hiltner S, Oertelt-Prigione S (2017) Gender and the Genome

Radboudumc

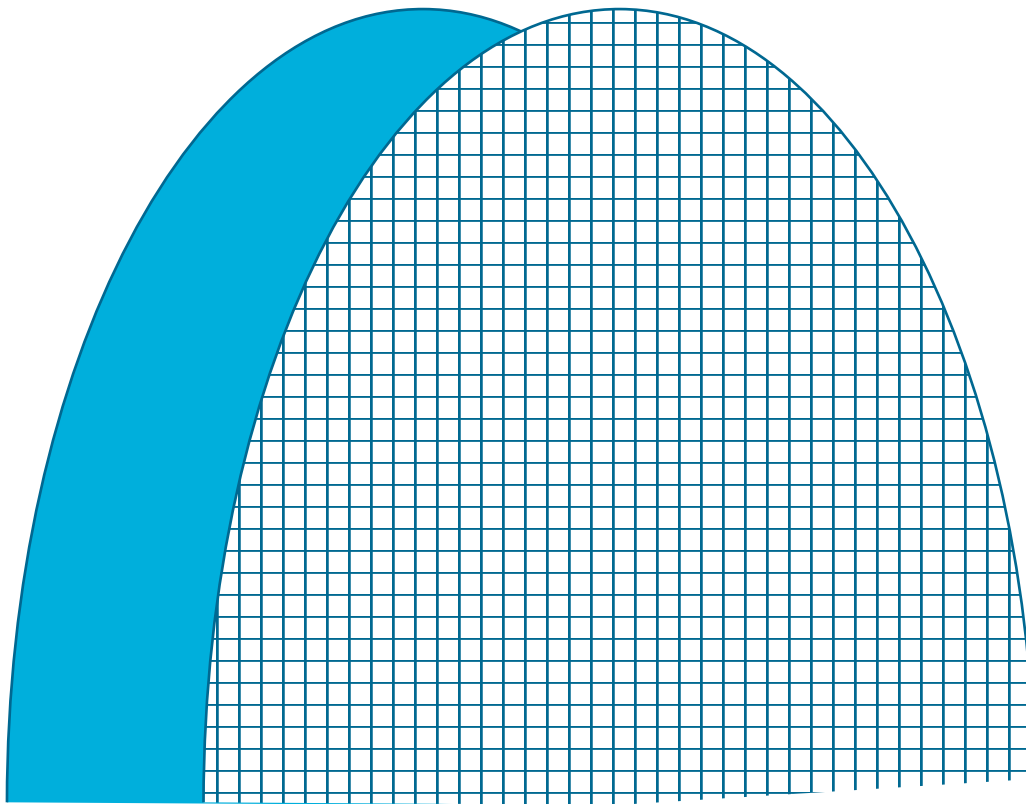
IntER sex differences vs. IntRA sex differences

Sarah Hiltner
18-12-2018

Inter



Intra



Why is it not mainstream yet?

Sarah Hiltner

18-12-2018

Discrimination

Sarah Hiltner
18-12-2018

Discrimination of women

“Let me tell you about my trouble with girls ... three things happen when they are in the lab ... You fall in love with them, they fall in love with you and when you criticise them, they cry.” Tim Hunt, 2015, Nobel Prize Winner for Physiology or Medicine 2001

Experiences of resistance by gender medicine pioneers

Results

“They did not see the problem – they thought I was the problem!” (Frau Magenta)

Results

“[I]f you are a cardiologist for twenty-five years - you have to learn now that you may have done things wrong with many female patients, it's not nice to accept!” (Frau Magenta)

Results

“[T]here is a resistance, because sometimes gender will be associated with an ideology of feminism. And I say, well, of course I'm a feminist, I really am a feminist, but what I'm doing now is based on the theory and not ideology of feminism, but I will implement it into just practical proposals for education and daily practice.” (Frau Lavendel)

New problem: Algorithms

Sarah Hiltner
18-12-2018

Bias in AI and Neuroscience Transdisciplinary conference 17-19th June 2019 Radboud University Nijmegen

Sarah Hiltner
18-12-2018

Thank you!

Sarah Hiltner, Sociologist MA & Physical therapist

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