Presentation skills and strategies

How to make and deliver a compelling presentation

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Weill Cornell Medicine

Weill Cornell Medicine

Agenda

- ¥The Thesis (aka Central Idea)
- ¥Connecting with your audience
- ¥Speaking styleÐ know your content, donÕt read from your slides
- ¥Slide structure
- ¥Visual considerationsÐ big fonts, ample contrast, minimalism...
- ¥Reinforce your key points
- ¥Now you try!

Format: Abstract

Send to

Proc Natl Acad Sci U S A. 2004 Dec 28;101(52):18099-104. Epub 2004 Dec 16.

TBX21: a functional variant predicts improvement in asthma with the use of inhaled corticosteroids.

Tantisira KG[1], Hwang ES, Raby BA, Silverman ES, Lake SL, Richter BG, Peng SL, Drazen JM, Glimcher LH, Weiss ST.

Author information

Abstract

TBX21 encodes for the transcription factor T-bet (T-box expressed in T cells), which influences naive T lymphocyte development and has been implicated in asthma pathogenesis. Specifically, the T-bet knockout mouse spontaneously develops airway hyperresponsiveness and other changes consistent with asthma. Because airway responsiveness is moderated by the use of inhaled corticosteroids in asthma, it is conceivable that genetic variation in TBX21 may alter asthma phenotypes in a treatment-specific fashion. Here we demonstrate that the nonsynonymous variation in TBX21 coding for replacement of histidine 33 with glutamine is associated with significant improvement in the PC(20) (a measure of airway responsiveness) of asthmatic children in a large clinical trial spanning 4 years. We note that this increase occurs only in the children randomized to inhaled corticosteroids and that it dramatically enhances the overall improvement in PC(20) associated with inhaled corticosteroid usage. The average PC(20) at trial end for subjects on inhaled corticosteroids possessing a variant allele was in the normal range for nonasthmatics. In cellular models, we show that the TBX21 variant increases T helper 1 and decreases T helper 2 cytokine expression comparably with wild type. TBX21 may thus be an important determinant pharmacogenetic response to the therapy of asthma with inhaled corticosteroids.

PMID: 15604153 PMCID: PMC539815 DOI: 10.1073/pnas.0408532102

[PubMed - indexed for MEDLINE] Free PMC Article

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Similar articles

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NK2R G231E G8 [J Clin Pharm

Genetic variation of TBX21 gen
risk of asthma and its [J Hum

Genome-wide association iden
gene as [Am J Respir Crit Care

Review Combination of inhaled
acting [Cochrane Database Sys

Review Addition of inhaled lon
beta2 [Cochrane Database Sys

In clinical and biomedical research, an abstract's final or penultimate sentence often represents the t hesis

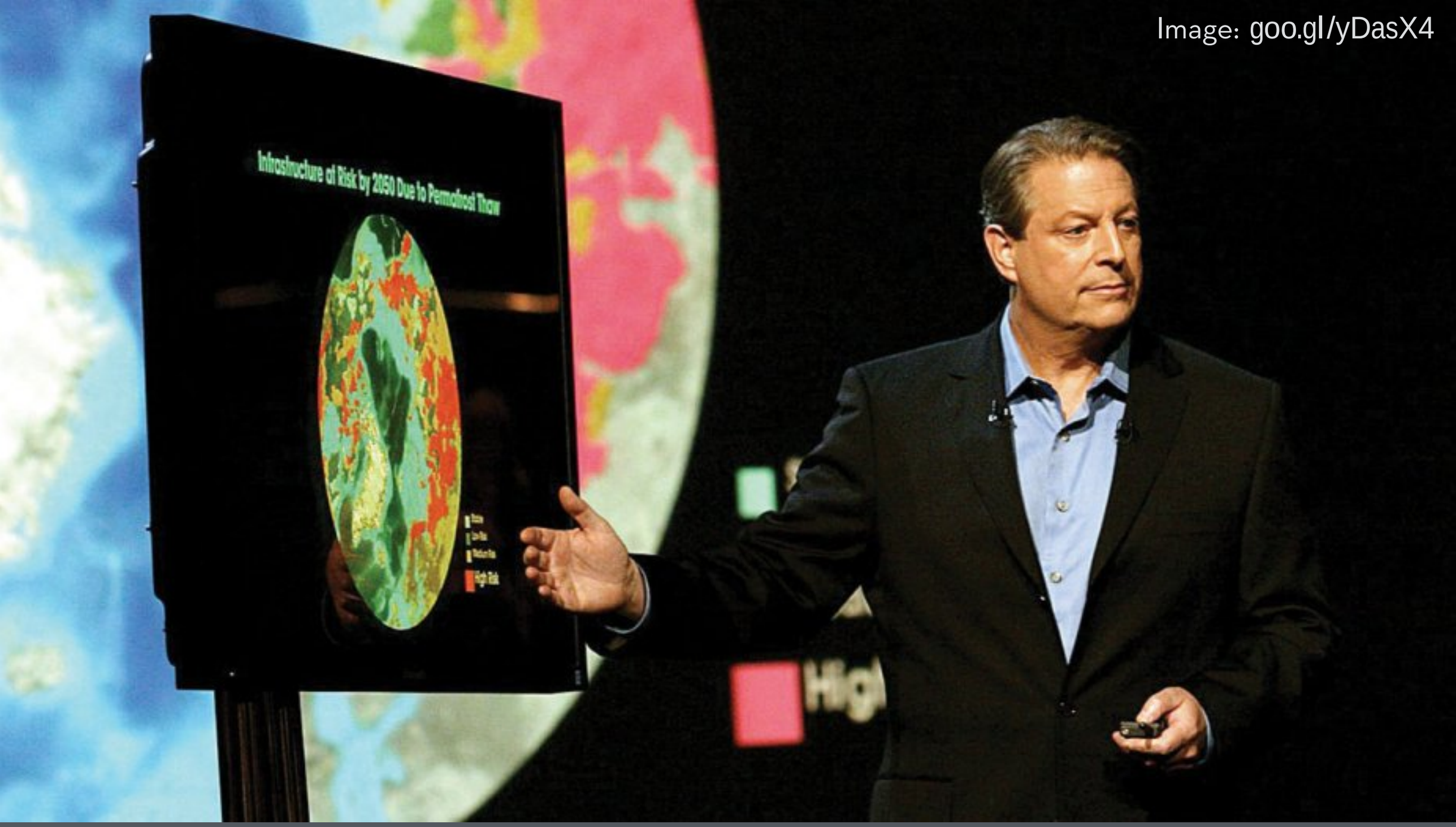


Image: goo.gl/yDasX4

Presentation: Al Gore, *An Inconvenient Truth*, c. 2006

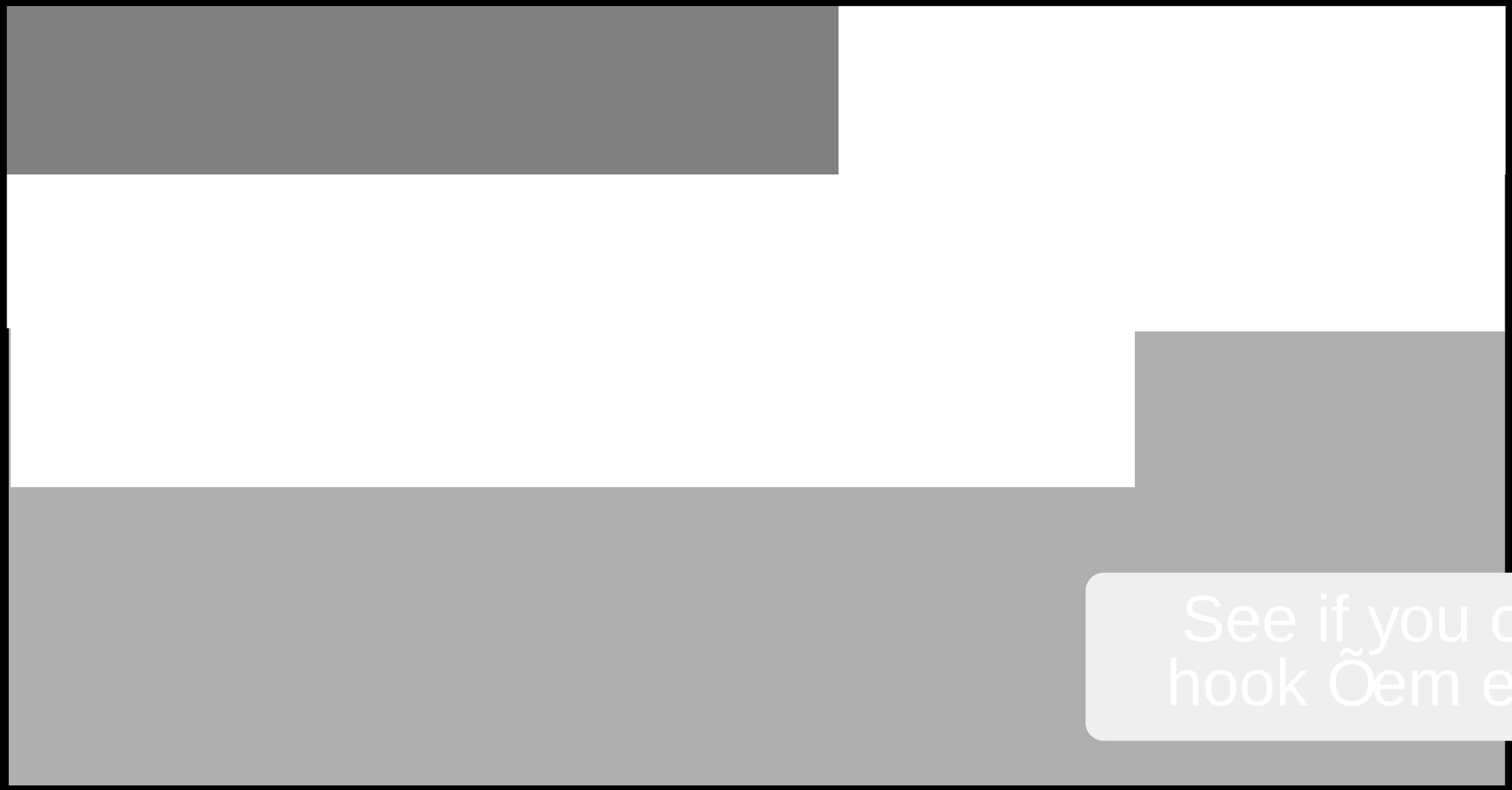
Thesis: “In the absence of immediate action, climate change will have catastrophic e□ects.”

Chronic microbes alter expression of the body's metabolites

human beta-defensin 1
(hBD-1)

PMID: 21248835

The leading cause of death of ÞreÞghters is not work-related



- Trauma
- Burn/asphyxiation
- Other
- Cardiovascular death

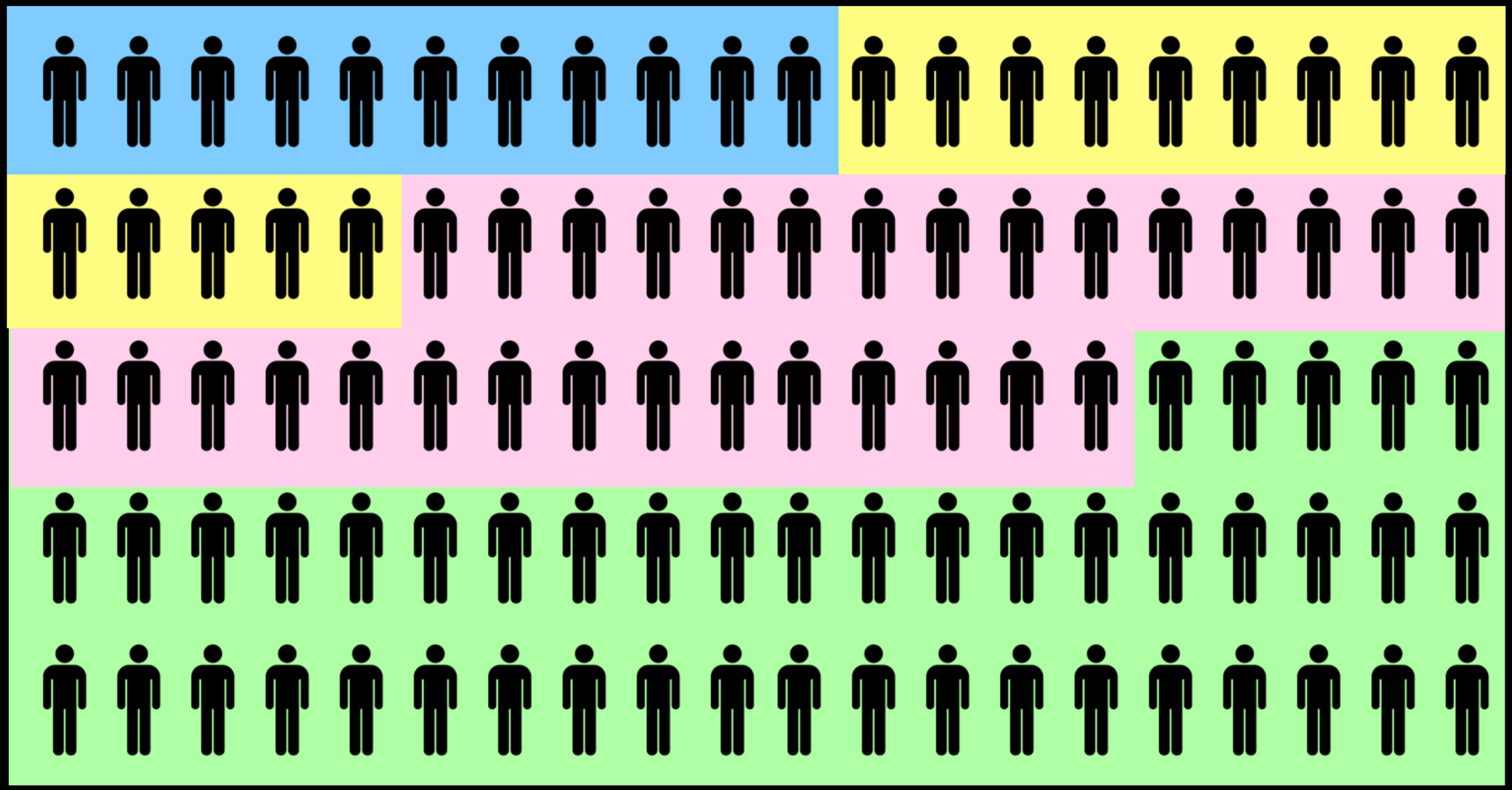
Source: FEMA

Who is your audience?

- Education, training, and knowledge base – Where are they starting from? Which acronyms or concepts require explanation?
- Reasons for attending – To learn something new? To make money? To evaluate you? Because they were compelled?
- Receptivity – What are their biases?

Another option: pique your audience's interest early on

The leading cause of death of firefighters is not work-related



- Trauma
- Burn/asphyxiation
- Other
- Cardiovascular death

Source: FEMA

Engaging your audience

According to learning theory, knowledge is constructed. What is the existing structure you must build upon?

Who is your audience?

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- **Receptivity –** What are their biases?

Presentations should be tailored to the anticipated audience

- Researchers in the field of your presentation
- Researchers in another field
- 8th graders
- Patient groups
- Journalists
- Congressmen
- Chief residents
- Attending physicians

How exactly does one talk good?

Talk to your audience – not to your slides

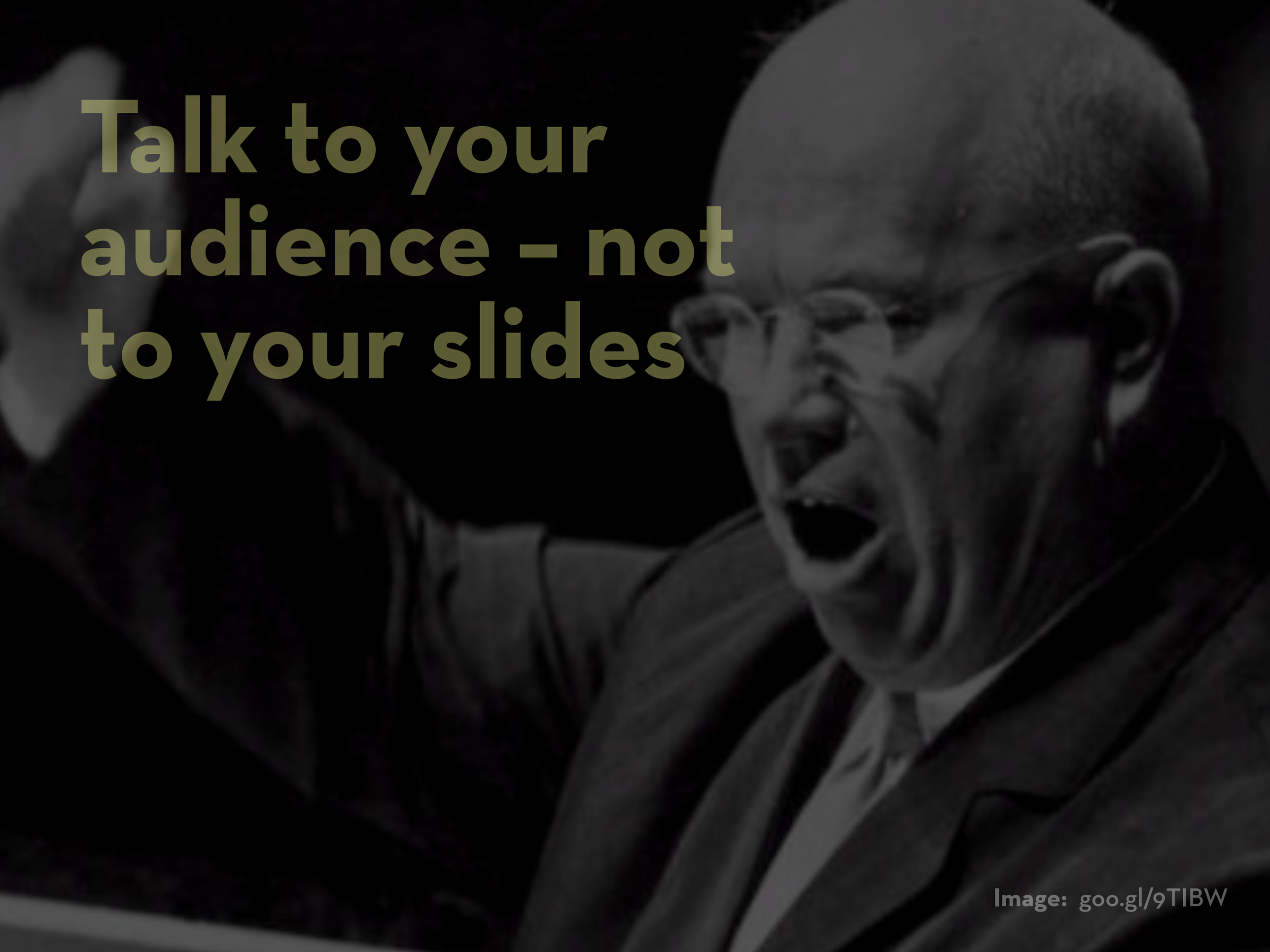


Image: goo.gl/9TIBW

Your slides should:

- illustrate key information
- reinforce messages
- serve as a prompt

Your slides should NOT:

- serve as a script

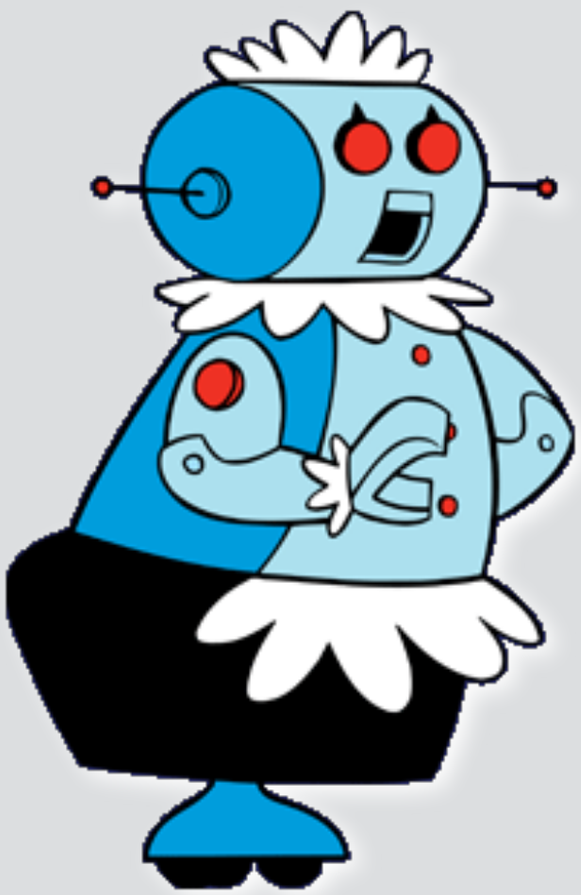
Use strong eye contact

Skip the fillers

Image: goo.gl/rgUj4

How enthusiastic should a presenter be?

Low



High

Natural state for most people

Socratic ideal for presenters

Images: https://goo.gl/ofEHBV https://goo.gl/IhggvM

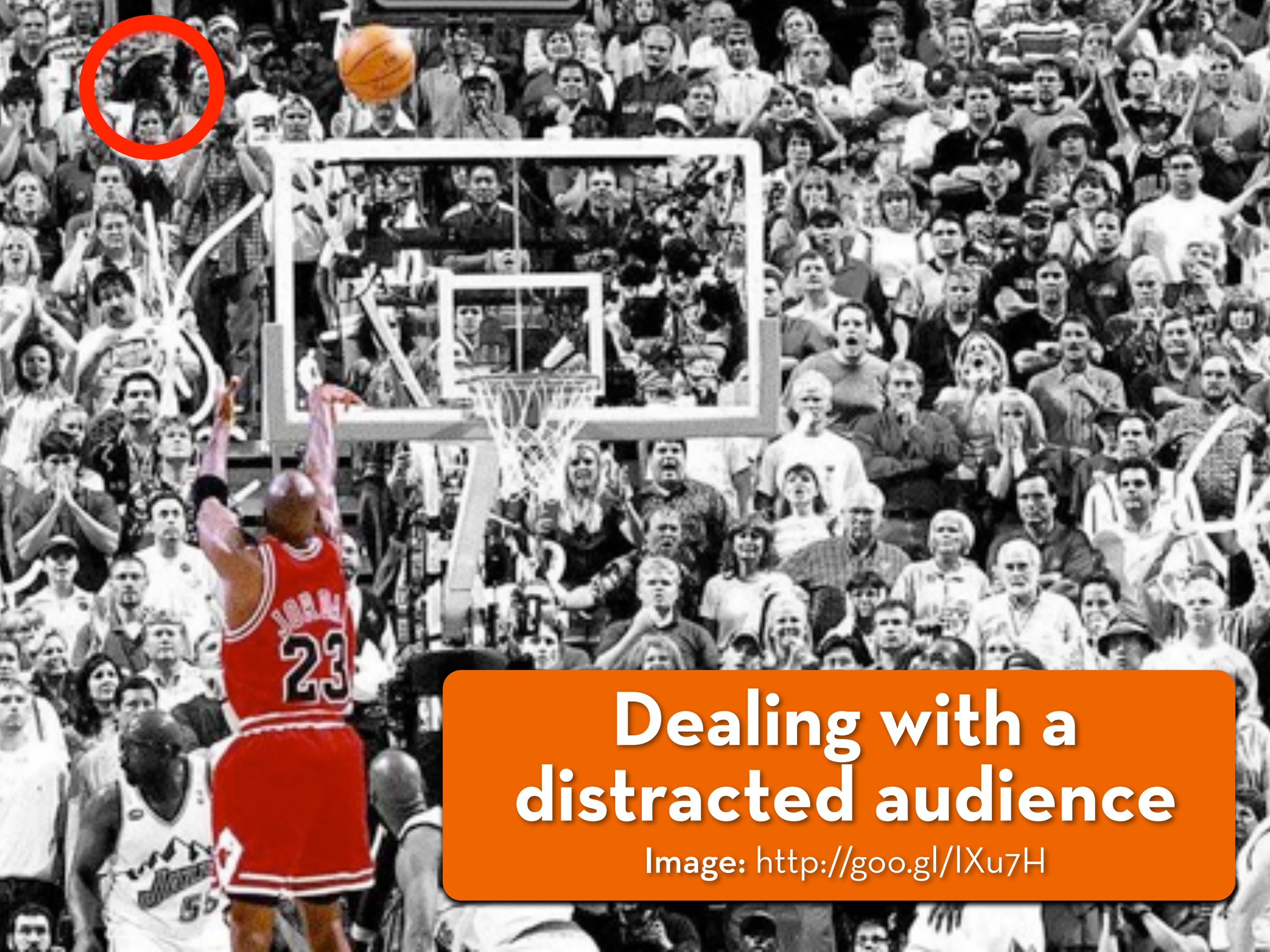
Do you have a mousy voice?

Image: goo.gl/izgKN

Channel your inner construction worker and speak up!

Be this guy.

Image: goo.gl/vGscu



Dealing with a distracted audience

Image: http://goo.gl/lXu7H

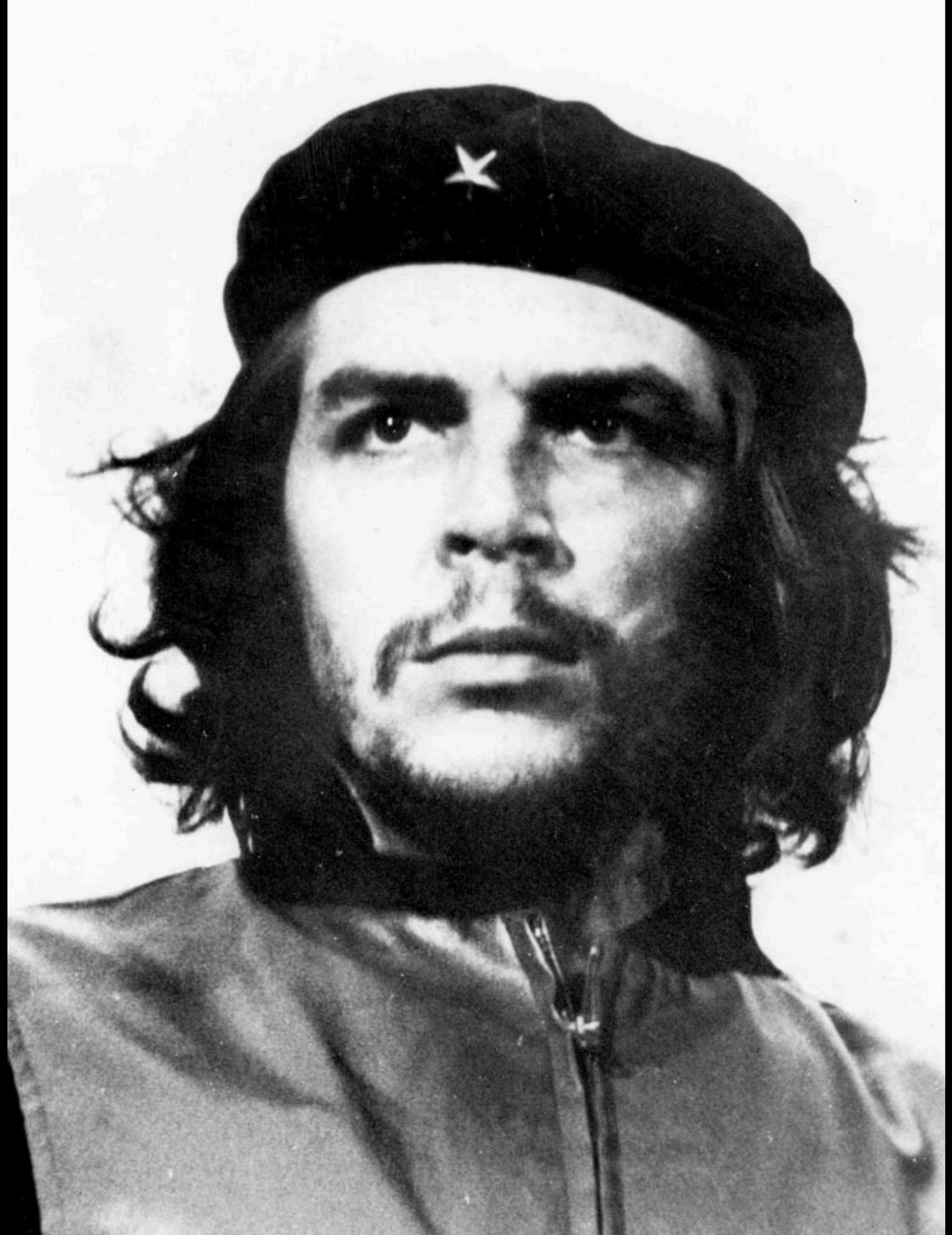
Combatting distraction

- circulate among the audience, slightly invading personal space
- ask a question
- assign a task

- sit on lap of people who aren't paying attention
- stare menacingly
- smash their iPhones

Effective graphical communication is not an accident.

What about successful visual propaganda makes it resonate?



We Can Do It!
WAR PRODUCTION CO-ORDINATING COMMITTEE

HOPE

We Can Do It!
WAR PRODUCTION CO-ORDINATING COMMITTEE

HOPE

How effective are these competing approaches?

Humans are controlled by a metagenome

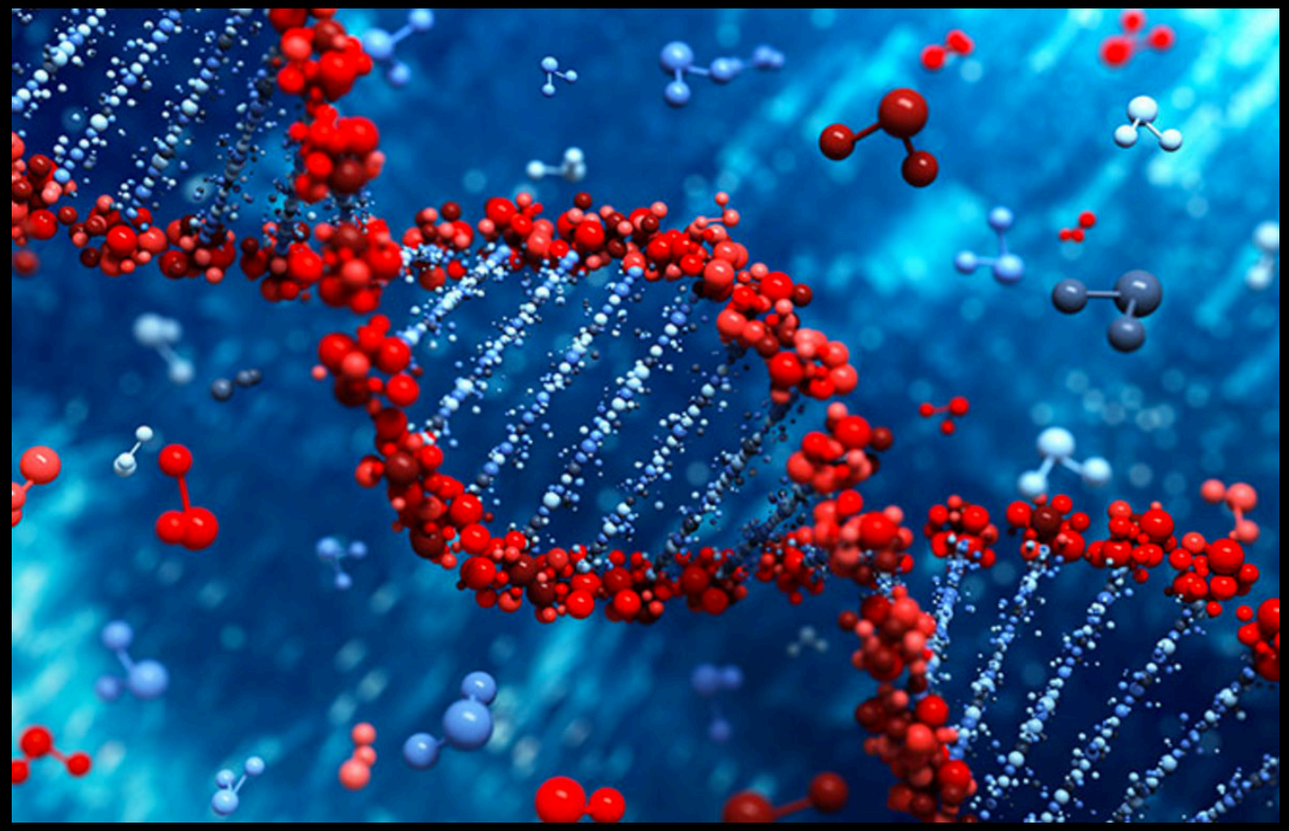
- Human microbiome have millions of genes vs human genome which have 20,500 genes
- Thousands of microbial cells can persist inside a single infected human cell.
- Combined genetic contributions of microbes provide a vast number of gene products not encoded by our own relatively small genomes.
- Considerable similarity between the functions of the bacterial organisms and the human organisms

Humans are controlled by a metagenome

- Human microbiome - millions of genes
- Human genome - 20,500 genes

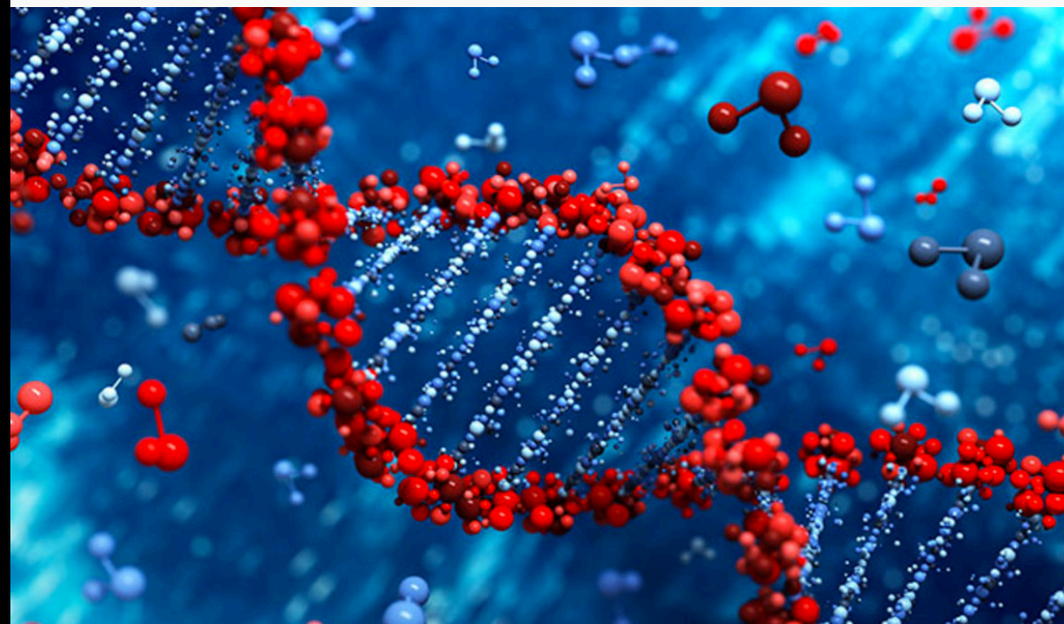
Humans are controlled by a metagenome

- Human microbiome - millions of genes
- Human genome - 20,500 genes



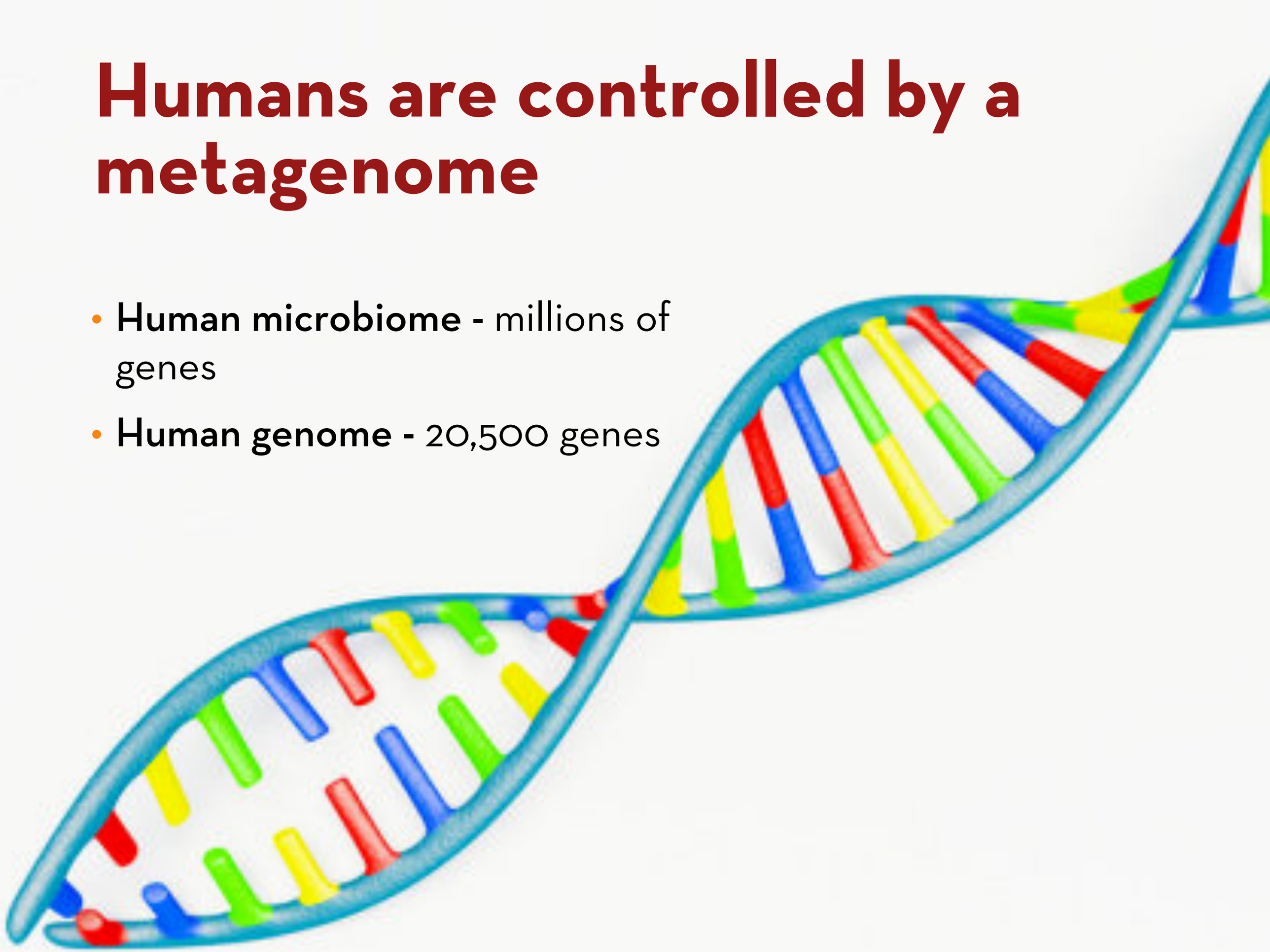
Humans are controlled by a metagenome

- Human microbiome - millions of genes
- Human genome - 20,500 genes



Humans are controlled by a metagenome

- **Human microbiome -** millions of genes
- **Human genome -** 20,500 genes



Humans are controlled by a metagenome

- Human microbiome - millions of genes
- Human genome - 20,500 genes

Humans are controlled by a metagenome

Human microbiome

Millions of genes

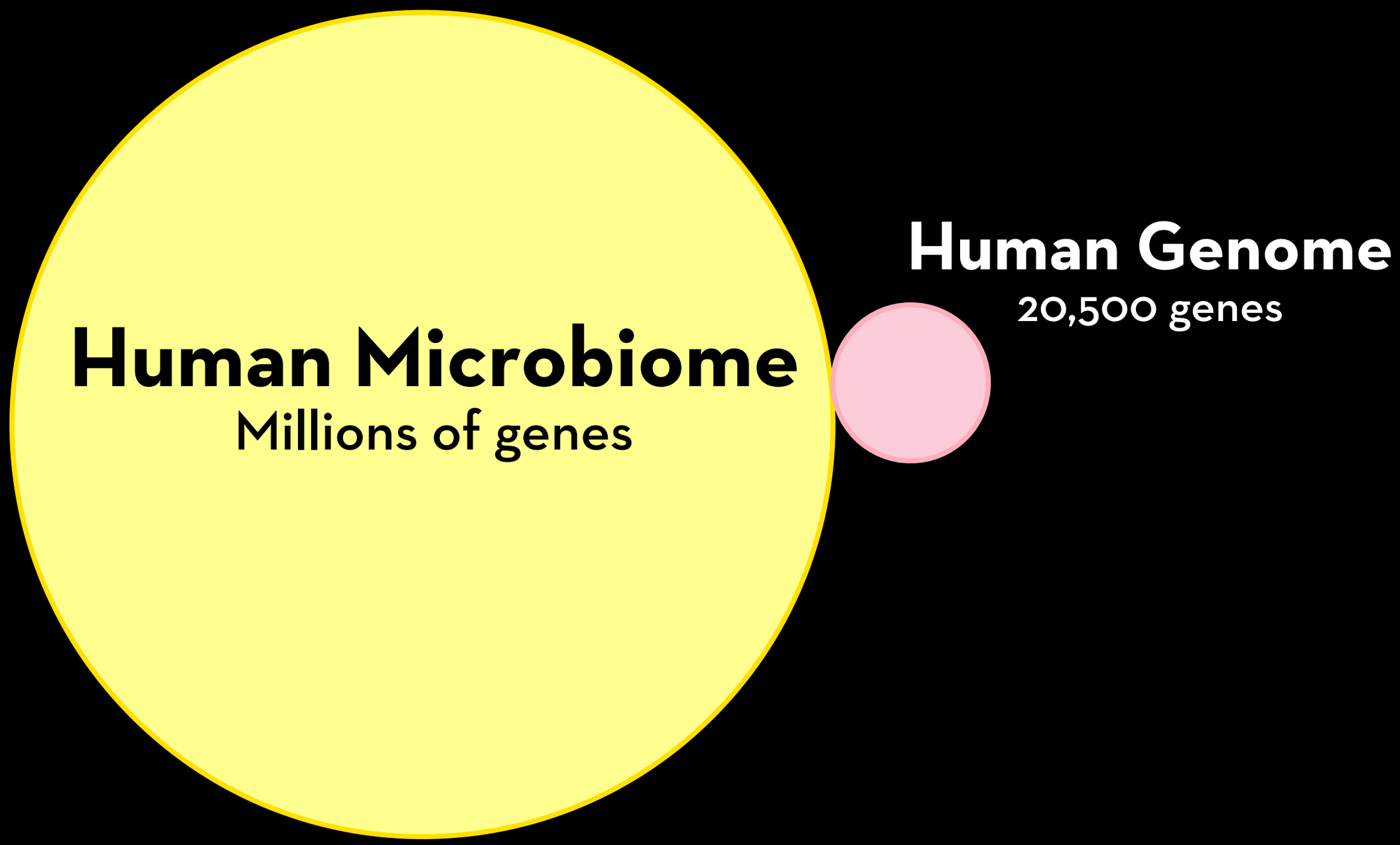
TCTGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGT
TGTTGTGATGGCTATCTGCGAGACTGGATTGTGTAGACAATAA
GCACAGAGCAGGTTGTTGTGATTGGCTATCTGCGAGACTGGA
TTGTGTAGACAATAAGCACAGAGCAGGTTGTTGTGATTGGCTA
TCTGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGT
TGTTGTGATTGGCTTCTGCGAGACTGGATTGTGTAGACAATAA
GCACAGAGCAGGTTGTTGTGATGGCTATCTGCGAGACTGGAT
TGTGTAGACAATAAGCACAGAGCAGGTTGTTGTGATTGGCTAT
CTGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGTT
GTTGTGATTGGCTATCTGCGAGACTGGATTGTGTAGACAATAA
GCACAGAGCAGGTTGTTGTGATTGGCTTCTGCGAGACTGGAT
TGTGTAGACAATAAGCACAGAGCAGGTTGTTGTGATGGCTATC
TGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGTTG
TTGTGATTGGCTATCTGCGAGACTGGATTGTGTAGACAATAAG
CACAGAGCAGGTTGTTGTGATTGGCTATCTGCGAGACTGGAT
TGTGTAGACAATAAGCACAGAGCAGGTTGTTGTGATTGGCTTC
TGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGTTG
TTGTGATGGCTATCTGCGAGACTGGATTGTGTAGACAATAAGC
ACAGAGCAGGTTGTTGTGATTGGCTATCTGCGAGACTGGATT
GTGTAGACAATAAGCACAGAGCAGGTTGTTGTGATTGGCTATC
TGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGTTG
TTGTGATTGGCTTCTGCGAGACTGGATTGTGTAGACAATAAGC
ACAGAGCAGGTTGTTGTGATGGCTATCTGCGAGACTGGATTG
TGTAGACAATAAGCACAGAGCAGGTTGTTGTGATTGGCTATCT
GCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGTTGT

Human genome

20,500 genes

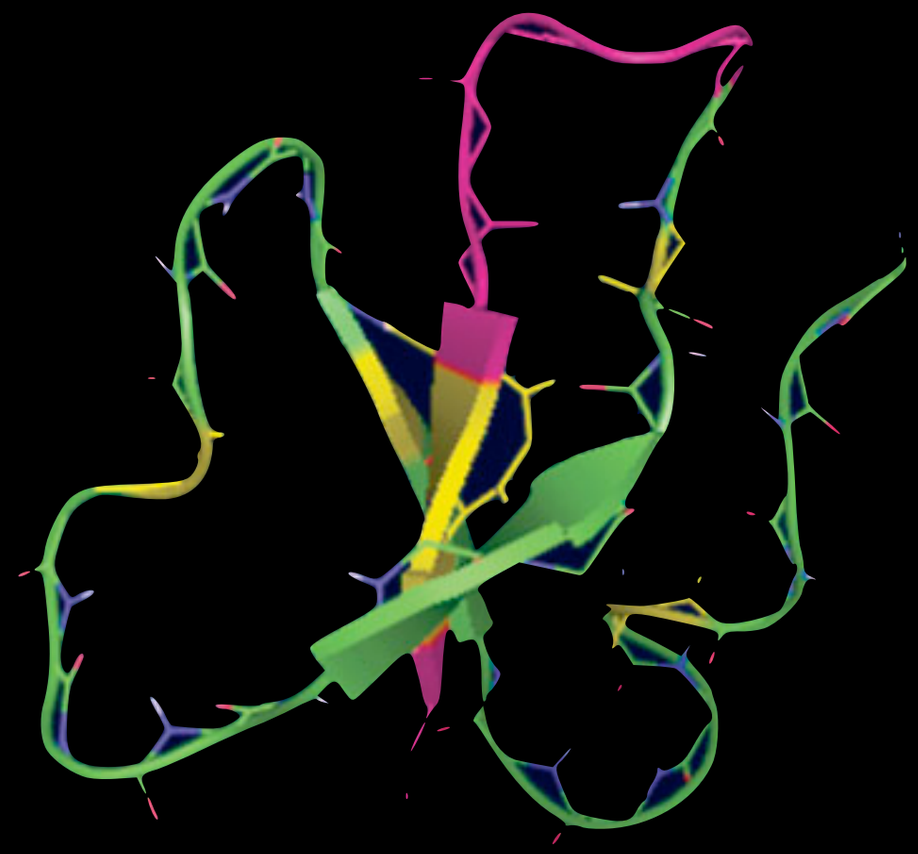
TCTGCGAGACTGGATTGTGTAGACAATAAGCACAGAGCAGGT
TGTTGTGATGGCTATCTGCGAGACTGGATTGTGTAGACAATAA

Humans are controlled by a metagenome



One idea per slide

Chronic microbes alter expression of the body's metabolites



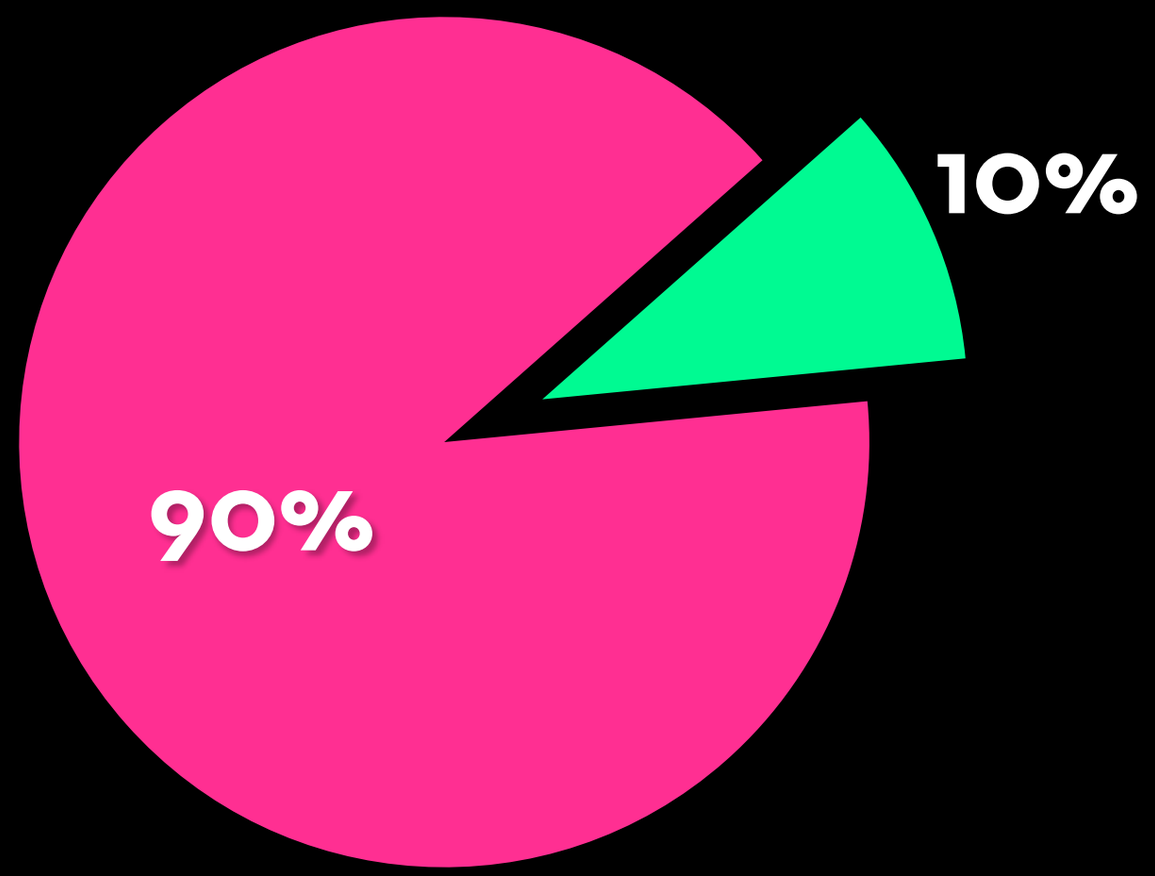
human beta-defensin 1
(hBD-1)

PMID: 21248835

Cut design elements

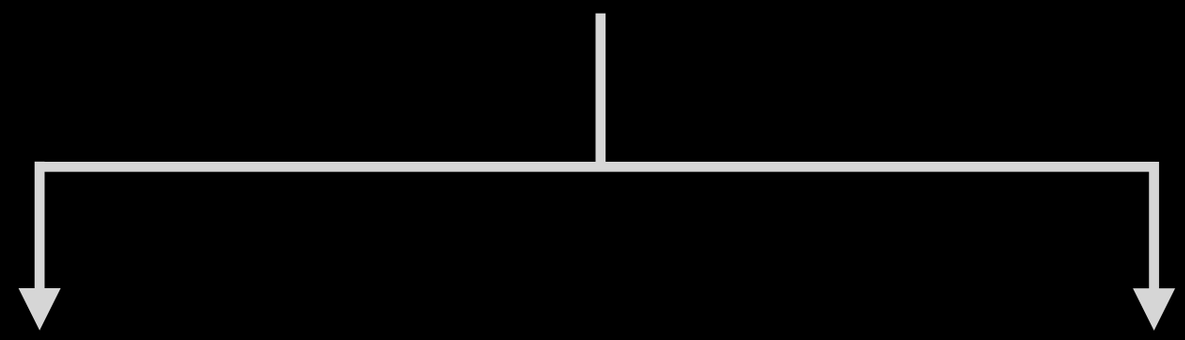
White space implies value. Are your ideas valuable?

The vast majority of bacteria in the human body have yet to be cultured



Source: Nature. 2007;449(7164):811-8.

The Vitamin D Receptor transcribes a variety of key genes



Autoimmune genes

Insulin-like growth factor-binding protein 3 (IGFBP-3)

Cancer genes

Metastasis suppressor protein 1 (MTSS1)

Repurpose the same visual elements for a polished look

These slides use the same visual conventions

Consistency implies sanity

- Header font
- Header font size
- Header font color
- Body font
- Body font size
- Body font color
- Distance between header and top of slide
- Distance between body and left of slide

74px

Consistency implies sanity

79px

Neutra Text Bold, 63px, #FFFB83
Aligned center

- Header font
- Header font size
- Header font color

98px

- Body font
- Body font size
- Body font color
- Distance between header and top of slide
- Distance between body and left of slide

Neutra Text Regular, 35px, white

Use templates smartly

Institutional templates

- The template for Weill Cornell Medical College is available on the College's site:
  - http://brand.weill.cornell.edu
- You are supposed to use these templates in any talks in which you represent the College.

Pros of templates

- Institutions tend to mandate that you use them
- It’s less work to create PowerPoints with them
- Consistent look and feel can make the presentation seem more professional

Cons of templates

- Depend on the template
- Many have small default text, inviting you to include too much content
- You don’t want to compete against your slides for your viewers’ immediate attention.

Cons of templates

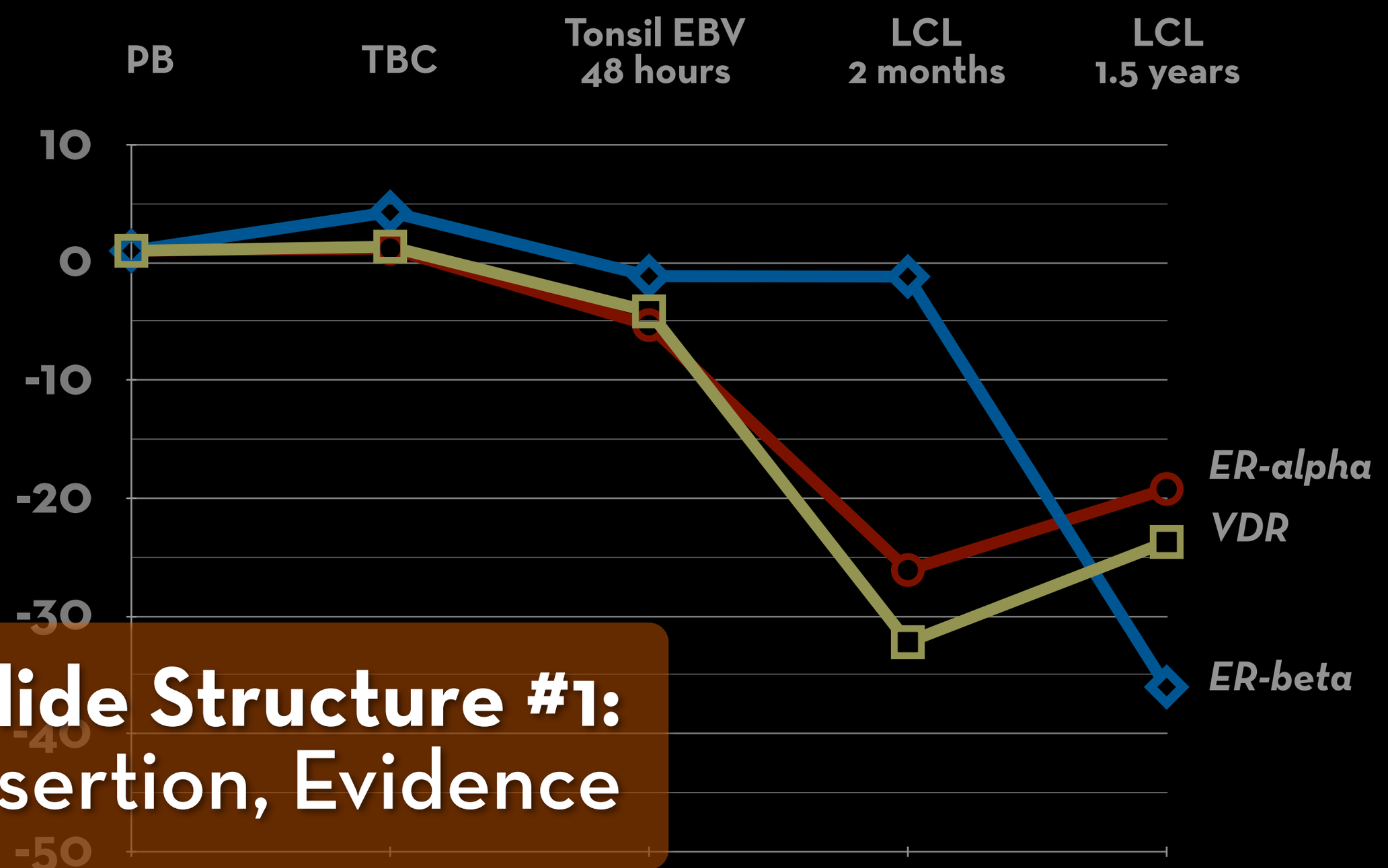
I bolded the header!!
(not a felony except in Texas)

- Depend on the template
- Many have small default text, inviting you to include too much content
- You don't want to compete against your slides for your viewers' immediate attention.

There's no rule that says you can't tweak a template.

Slide structure: organizing content on a slide

Nuclear receptors' mRNA expression is downregulated upon infection of B-cells with EBV

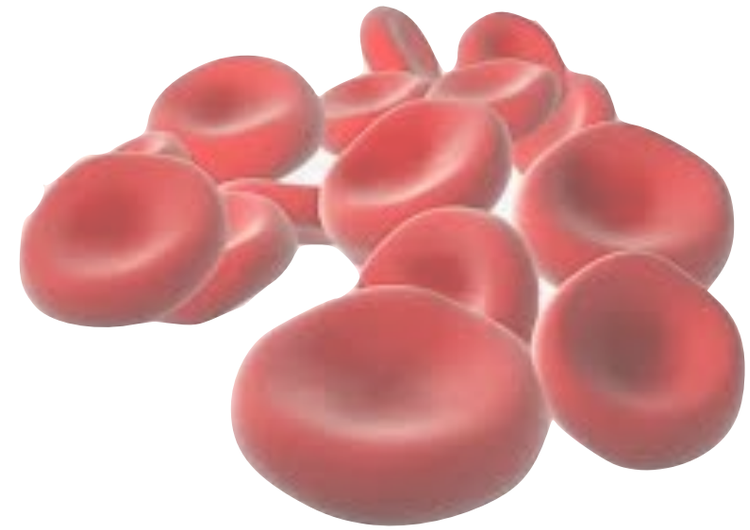


Slide Structure #1:
Assertion, Evidence

Source: *Experimental Oncology*. 2009; 31(2): 92-96.

Stomach microbiome

PMID: 16407106



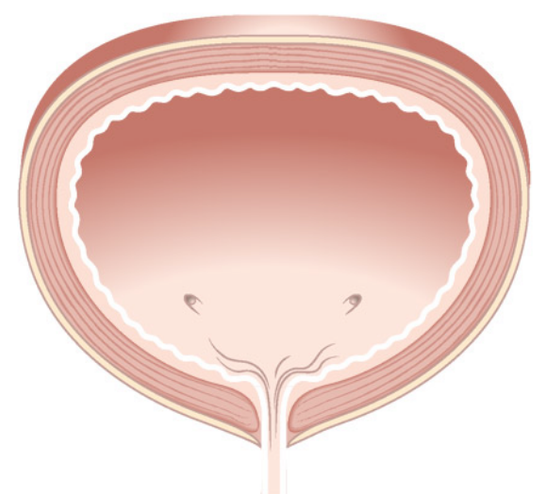
Blood microbiome

PMID: 21364979, 12454193

Slide Structure #2: Topic

Lung microbiome

PMID: 22683412



Bladder microbiome

PMID: 22278835

Slide structure #2: Examples of good and bad topics

- **Good topics:**
  - EBV's effect on B-cells' mRNA expression
  - Epstein-Barr virus and protein expression in B-cells
  - How does EBV interact with white blood cells' nuclear receptors?

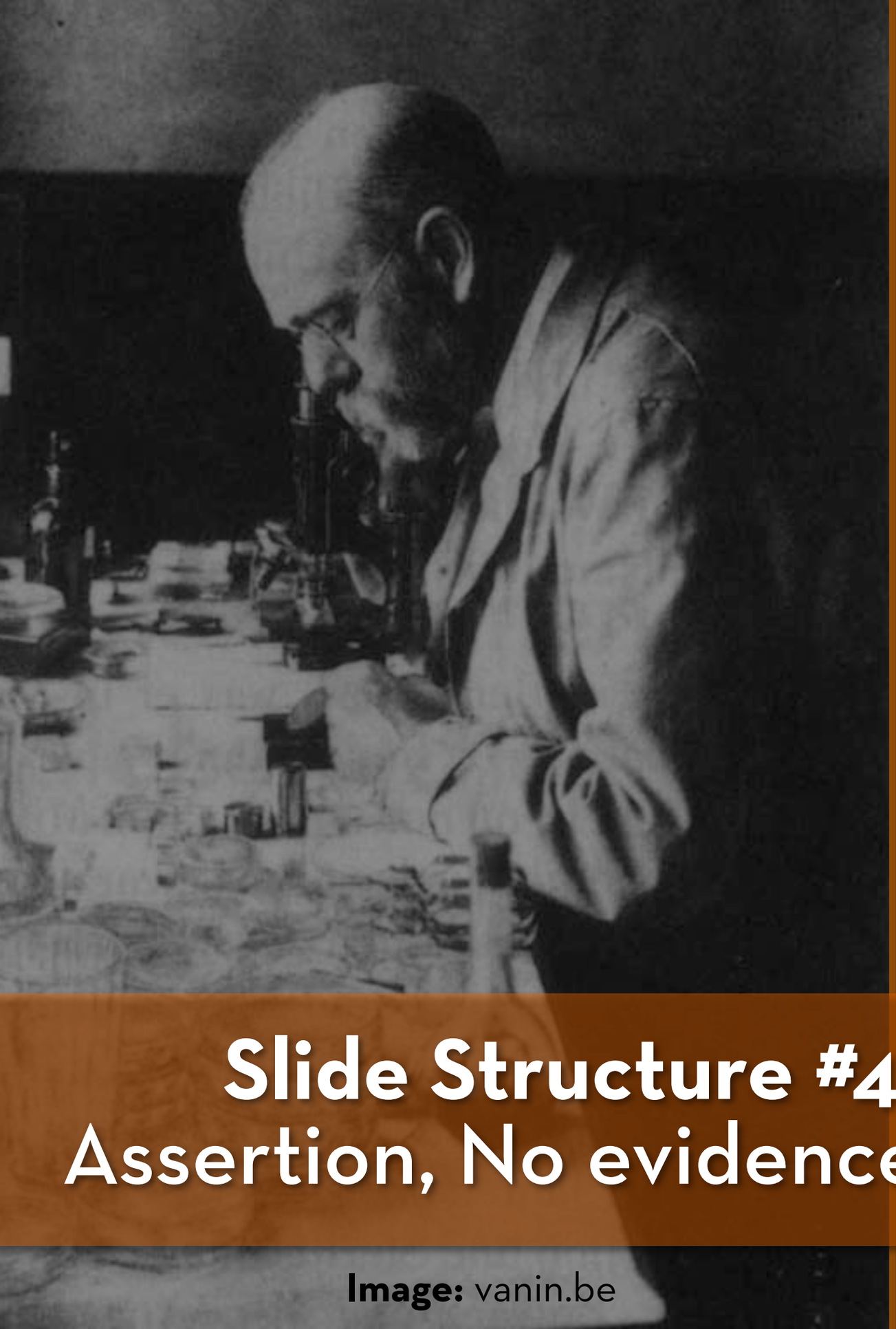
- **Bad topics:**
  - Epstein-Barr virus
  - Results

Maybe not so bad if you stick to the standard structure of a paper: Introduction, Methods, Results, Discussion, Conclusion.

“Autoantibodies” target microbes

Antibody	Shown to be generated in response to...	PMID
RO, La, dsDNA	Epstein-Barr virus (EBV)	17917546
RF	A variety of viral, bacterial, and parasitic infections Chronic infections Subacute bacterial endocarditis	9198668 8898963 214511
anti-EBNA-1	Lupus-specific autoantigens such as Sm or Ro	17121489
antibodies against annexin-V, prothrombin and laminin	Acute infections in patients without autoimmune disease	17121489
IgG or IgA autoantibodies against gastrin, leptin, vasopressin, and insulin	Over 30 microbes including *Lactobacilli, H. pylori, E. coli, Yersinia pseudotuberculosis*, and *Listeria monocytogenes*	18262391

Slide Structure #3:
Table



Koch's postulates did not anticipate the presence of a metagenomic microbiota.

Slide Structure #4:
Assertion, No evidence

Image: vanin.be

How wonderful that we have met with a paradox. Now we have some hope of making progress.

Niels Bohr

Slide Structure #5:
Quote

Avoid verbose slides

Предстоящая тарифная кампания

1. ФСТ должна утвердить федеральные факторы в новой структуре (они составляют~ 90% от конечного тарифа). После этого региональные регулирующие органы должны утвердить тарифы для конечных потребителей в рамках предельных.

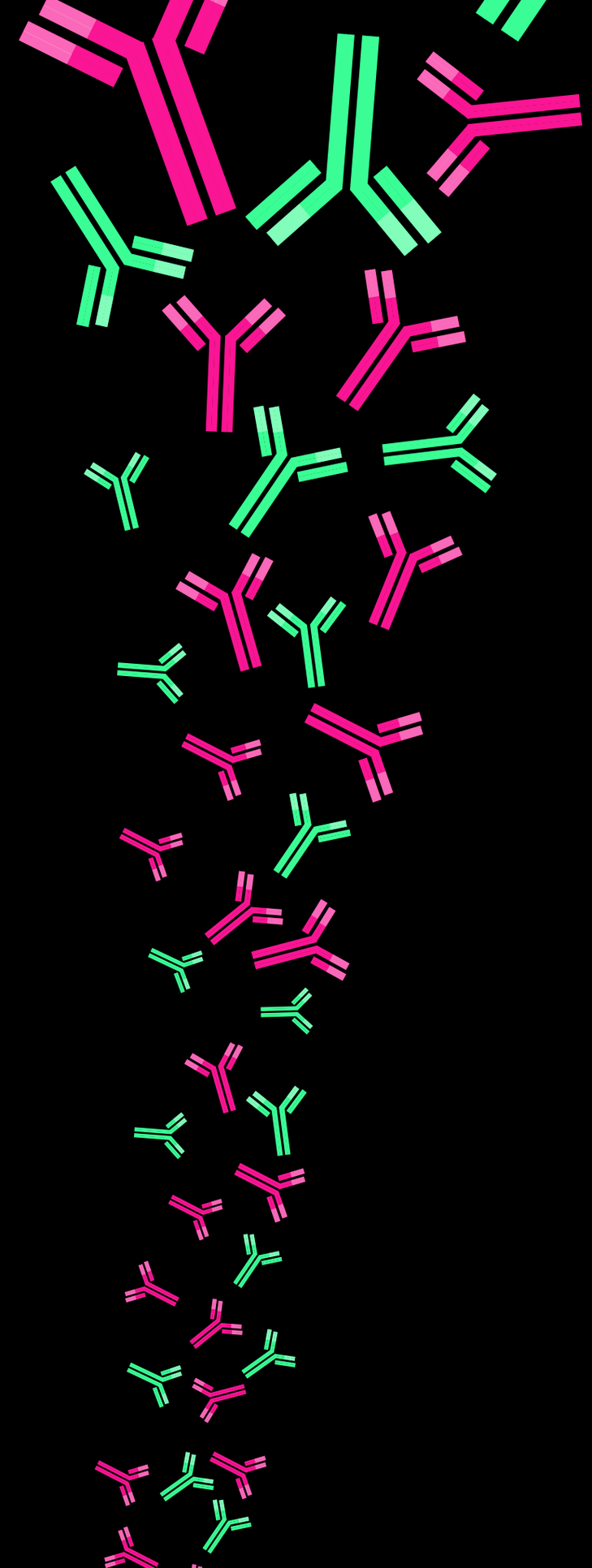
- Все федеральные факторы будут утверждены 20-30 ноября 2005 года. Причина – задержка Постановления Правительства о порядке вывода субъектов на ОРЭ и утверждения индивидуальных тарифов с ОРЭ.

- рганы должны кета субъекта РФ. т до утверждения

Knowing the language doesn't make this slide less terrible.

Idea and image: http://slidesha.re/ppt22

We must reevaluate the autoantibody



If you must use lots of words, highlight the key points

Even 13 year ago, estimates of resident microbial flora were far too low

Nasal secretions – 10^6 organisms/mL

Dental plaque – 10^{11} organisms/g

Saliva – 10^9 organisms/mL

Lungs – sterile

Stomach – 10^3 organisms/mL

Liver – sterile

Bile – sterile

Small intestine – 10^4 organisms/g

Large intestine – 10^{11} organisms/g

Skin (axilla and groin) – 10^6 organisms/cm^2

Skin (other sites) – 10^3 organisms/cm^2

Conjunctiva – < 10 organisms/mL

Pancreas – sterile

Kidneys – sterile

Bladder – < 10^3 organisms/mL

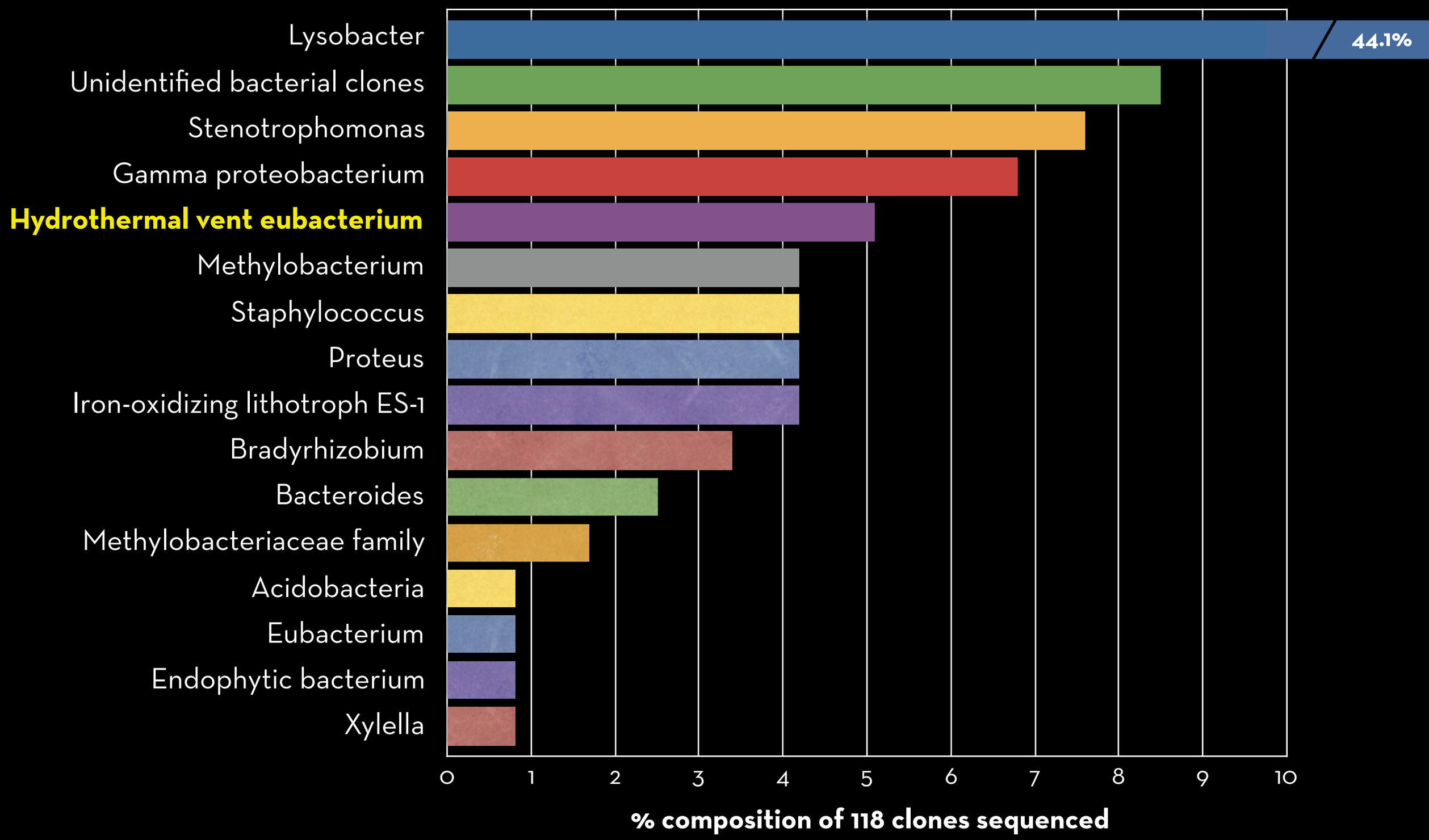
Uterus – sterile

Vaginal secretions – 10^9 organisms/g

From Noskin GA, ed. *Management of Infectious Complications in Cancer Patients*. Boston: Kluwer Academic; 1998.

Hip joint microbiome

Source: Dempsey. 2007. *Arthritis Res Ther* 9 p. R46.



Opt for easy-to-read sans serif fonts

Helvetica

Verdana

Arial

Calibri

Georgia

Neutra Text

Impact

Times New Roman *Hard to read*

Comic Sans

Use a mix of fonts from the same font family

This presentation uses four fonts from the same family

Neutra Text Bold

Neutra Text Book

Neutra Text Bold SC Italic

Neutra Text Bold Italic

Use big font sizes

Better

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Worse

Can you have a powerful slide with no imagery?

Yes.

If you include them, images must meaningfully contribute to the message

Do *you* use cliched images or clip art?

Images: 101cliches.com

Even this generic image of viruses offers little

Epstein-Barr virus and protein expression in B-cells

Full-screen images as backgrounds can serve your message

Humans are a superorganism

Image: usgs.gov

M. tuberculosis downregulates VDR by a factor of 3.3.

Source: Flannagan. 2009. *Nature Reviews Microbiology* 7 355-366.

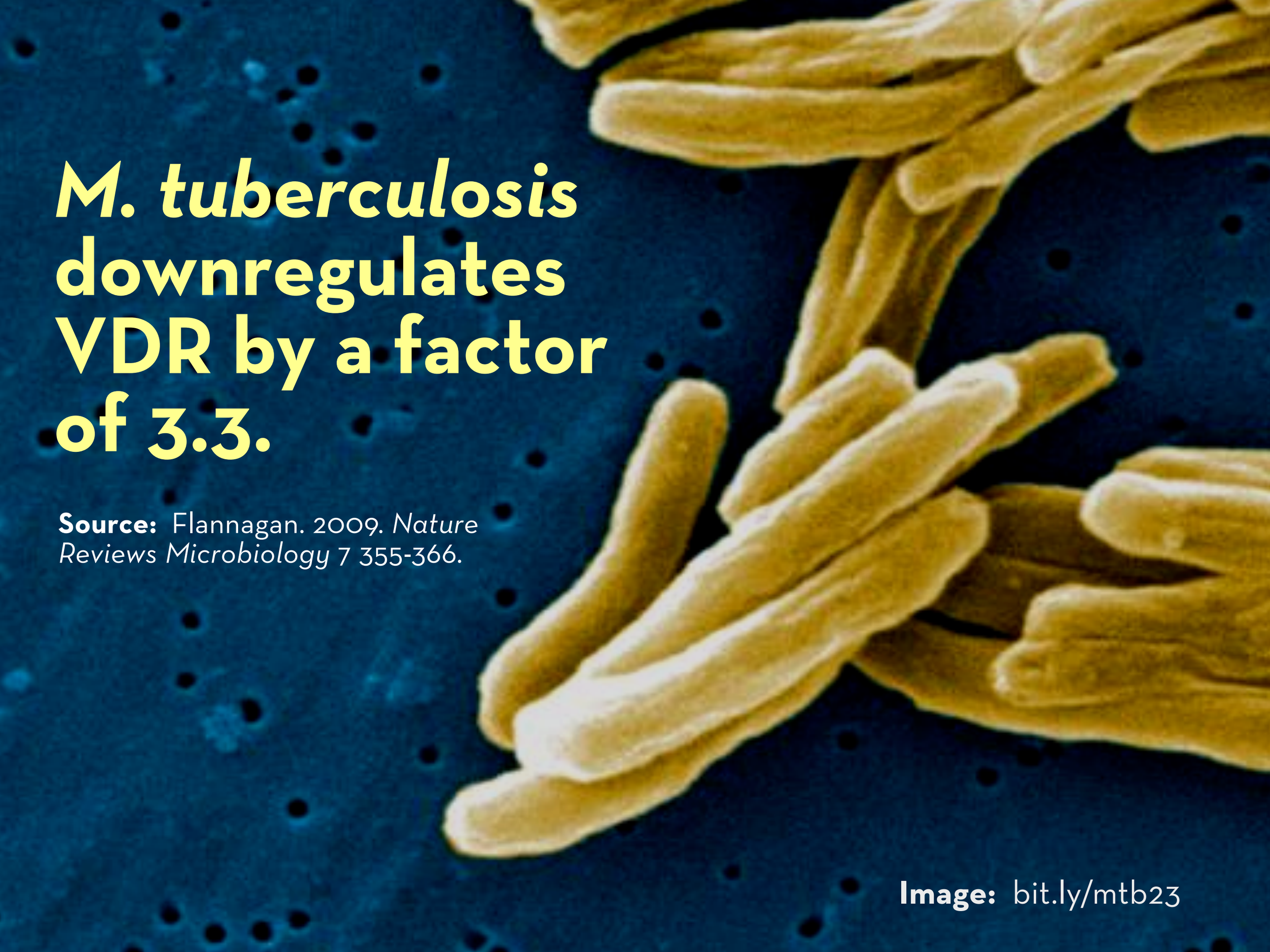


Image: bit.ly/mtb23

The VDR expresses at least 913 genes, many connected to autoimmune conditions and cancers.

PMID: 16002434

NM_000782	20q13	cytochrome P450, family 24, subfamily	IL1RL1	9173	12.26373346	0.408474318	ALOX5
NM_003856	2q12	interleukin 1 receptor-like 1	ALOX5	240	10.86848461	0.408474318	TSLP
NM_000698	10q11.2	arachidonate 5-lipoxygenase	TSLP	85480	10.49226764	0.408474318	EFTUD1
AW118681	5q22.1	thymic stromal lymphopoietin	EFTUD1	79631	9.521727202	0.408474318	---
NM_024580	15q25.2	elongation factor Tu GTP binding domain contain	---	---	9.500213101	0.408474318	HTR2C
AL137538	---	---	HTR2C	3358	9.468764071	0.408474318	SLCO1A2
NM_000868	Xq24	5-hydroxytryptamine (serotonin) receptor 2C	SLCO1A2	6579	9.322934871	0.408474318	FLJ38736
AF085224	12p12	solute carrier organic anion transporter family, me	FLJ38736	256764	9.226917628	0.408474318	FLJ31340
AK096055	15q21.3	hypothetical protein FLJ38736	FLJ31340	222223	9.031076985	0.408474318	CYP26B1
AI797353	7q21.12	hypothetical protein FLJ31340	CYP26B1	56603	8.928081064	0.408474318	LOC126669
NM_019885	2p13.2	cytochrome P450, family 26, subfamily B, polypep	LOC126669	126669	8.476686564	0.408474318	SEMA6D
AI797276	1q21.3	Hypothetical protein LOC126669	SEMA6D	80031	8.194610682	0.408474318	MGC34032
AL036088	15q21.1	sema domain, transmembrane domain (TM), and	MGC34032	204962	8.123858961	0.408474318	COL13A1
AA001450	1p31.1	Hypothetical protein MGC34032	COL13A1	1305	8.098022825	0.408474318	FLJ20054
M33653	10q22	collagen, type XIII, alpha 1	FLJ20054	54[illegible]	7.667254794	0.408474318	GIMAP8
NM_019049	1q31.3	[illegible]	[illegible]	[illegible]	[illegible]	0.408474318	MGC34032
AI611648	7q36.1	[illegible]	[illegible]	[illegible]	[illegible]	0.408474318	CRISPLD1
AW020413	1p31.1	hypothetical protein MGC34032	MGC34032	83690	7.303193115	0.408474318	FLJ23235
AF142573	8q21	[illegible]	LRCISP1	[illegible]	[illegible]	0.408474318	---
NM_024943	4p14	CDNA: FLJ21[illegible]	[illegible]	[illegible]	[illegible]	0.408474318	SLC1A1
BC041050	---	[illegible]	SLC1A1	6505	7.065148987	0.408474318	MGC33692
AW235061	9p24	[illegible]	[illegible]	[illegible]	[illegible]	0.408474318	FLJ31340
AW470714	---	hypothetical protein FLJ31340	LOC93349	93349	6.874059649	0.408474318	LOC93349
BF035563	7q21.12	hypothetical protein BC004921	C1orf24	116496	6.845929871	0.408474318	C1orf24
AK023116	2q37.1	[illegible]	KLK6	5653	6.762618007	0.408474318	KLK6
AF288391	1q25	kallikrein 6 (neurosin, zyme)	MGC34032	204962	6.755099735	0.408474318	MGC34032
NM_002774	19q13.3	hypothetical protein MGC34032	ITGA7	3679	6.715438059	0.408474318	ITGA7
NM_152697	1p31.1	integrin, alpha 7	MARCH3	115123	6.664728718	0.408474318	MARCH3
AK022548	12q13	[illegible] finger (C3HC4) 3	SEMA3B	7869	6.539976419	0.408474318	SEMA3B
AW593996	5q23	sema domain, immunoglobulin domain (Ig), short	PDCD1LG1	29126	6.459264166	0.408474318	CD274
NM_004636	3p21.3	Programmed cell death 1 ligand 1	FLJ10375	55129	6.453435262	0.408474318	FLJ10375
AI608902	9p24	hypothetical protein FLJ10375	SERPINB1	1992	6.438574812	0.408474318	SERPINB1
NM_018075	3p22.1-p21.33	serine (or cysteine) proteinase inhibitor, clade B (	LOC284837	284837	6.274134422	0.408474318	LOC284837
AI554300	6p25	hypothetical protein LOC284837	IL1RL1	9173	6.260288239	0.408474318	IL1RL1
BC034348	21q22.3	Interleukin 1 receptor-like 1	KLF4	9314	5.983071422	0.408474318	KLF4
AL117622	2q12	Kruppel-like factor 4 (gut)	TMEM40	55287	5.978925341	0.408474318	TMEM40
NM_004235	9q31	transmembrane protein 40	DUSP10	11221	5.886732425	0.408474318	DUSP10
NM_018306	3p25.2	dual specificity phosphatase 10	SERPINB1	1992	5.85407177	0.408474318	SERPINB1
AK022513	1q41	serine (or cysteine) proteinase inhibitor, clade B (	GEM	2669	5.789179552	0.408474318	GEM
NM_030666	6p25	GTP binding protein overexpressed in skeletal mu	KLHL5	51088	5.763224213	0.408474318	KLHL5
NM_005261	8q13-q21	kelch-like 5 (Drosophila)	MMP1	4312	5.71385768	0.408474318	MMP1
AK002174	4p14	matrix metalloproteinase 1 (interstitial collagenase	RHPN2	85415	5.632681297	0.408474318	RHPN2
NM_002421	11q22.3	rhophilin, Rho GTPase binding protein 2	---	---	5.600032022	0.152808268	---
BG054987	19q13.11	Transcribed locus	KLF4	9314	5.565029234	0.408474318	KLF4
AA732944	---	Kruppel-like factor 4 (gut)	GPR115	221393	5.561581204	0.408474318	GPR115
BF514079	9q31	G protein-coupled receptor 115	MGC33692	414918	5.532109307	0.408474318	MGC33692
W67511	6p12.3	similar to RIKEN cDNA 1700027J05 gene	TXNRD1	7296	5.528292961	0.408474318	TXNRD1
AW466979	---	thioredoxin reductase 1	LOC401548	401548	5.509575138	0.408474318	LOC401548
NM_003330	12q23-q24.1	similar to RIKEN cDNA 4732481H14	[illegible]	[illegible]	5.494078482	0.408474318	C1orf24

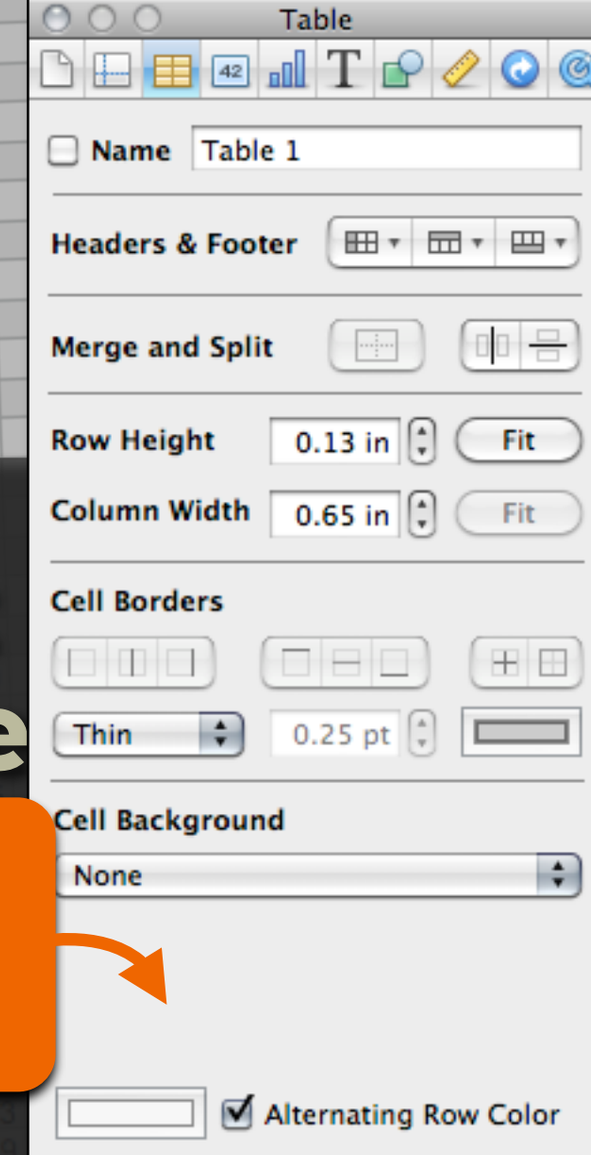
Use a spreadsheet as a striking background

The VDR expresses at 913 genes, many conne
to auto
and ca

PMID: 16002434

1. Take screenshot of a spreadsheet with alternating row colors.

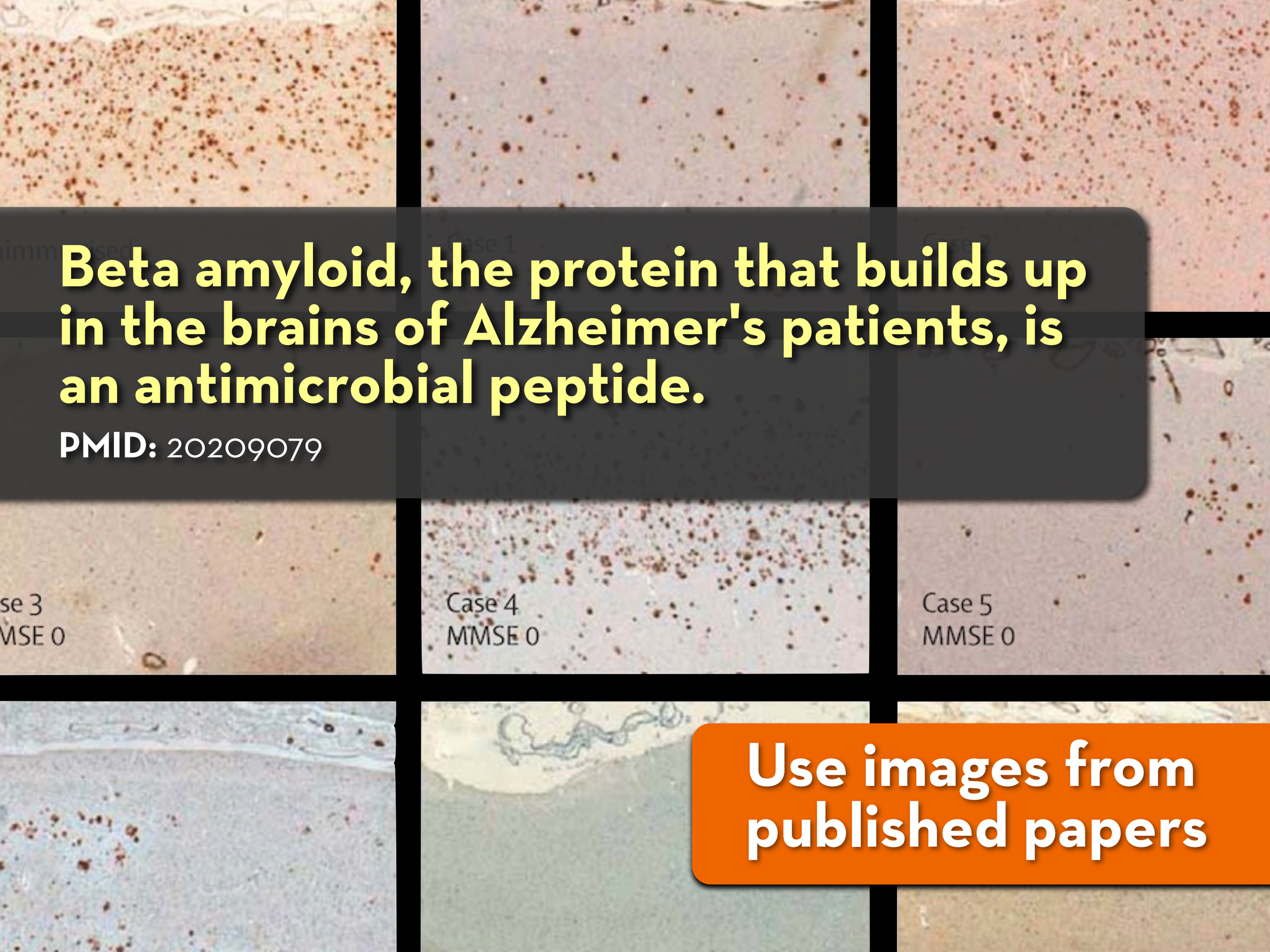
2. Rotate image two degrees.



Sometimes text is unnecessary as in this slide on aging.

Image: Michael Albert

Be resourceful about finding images that serve your message



Beta amyloid, the protein that builds up in the brains of Alzheimer's patients, is an antimicrobial peptide.

PMID: 20209079

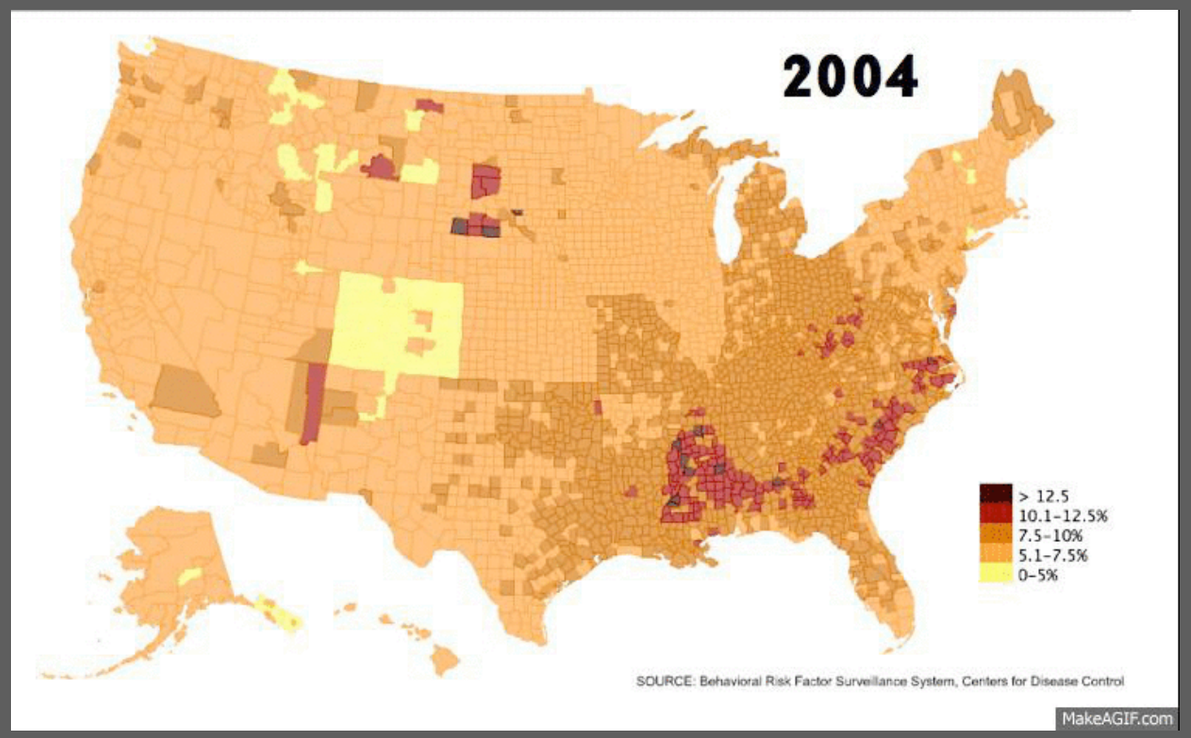
Use images from published papers

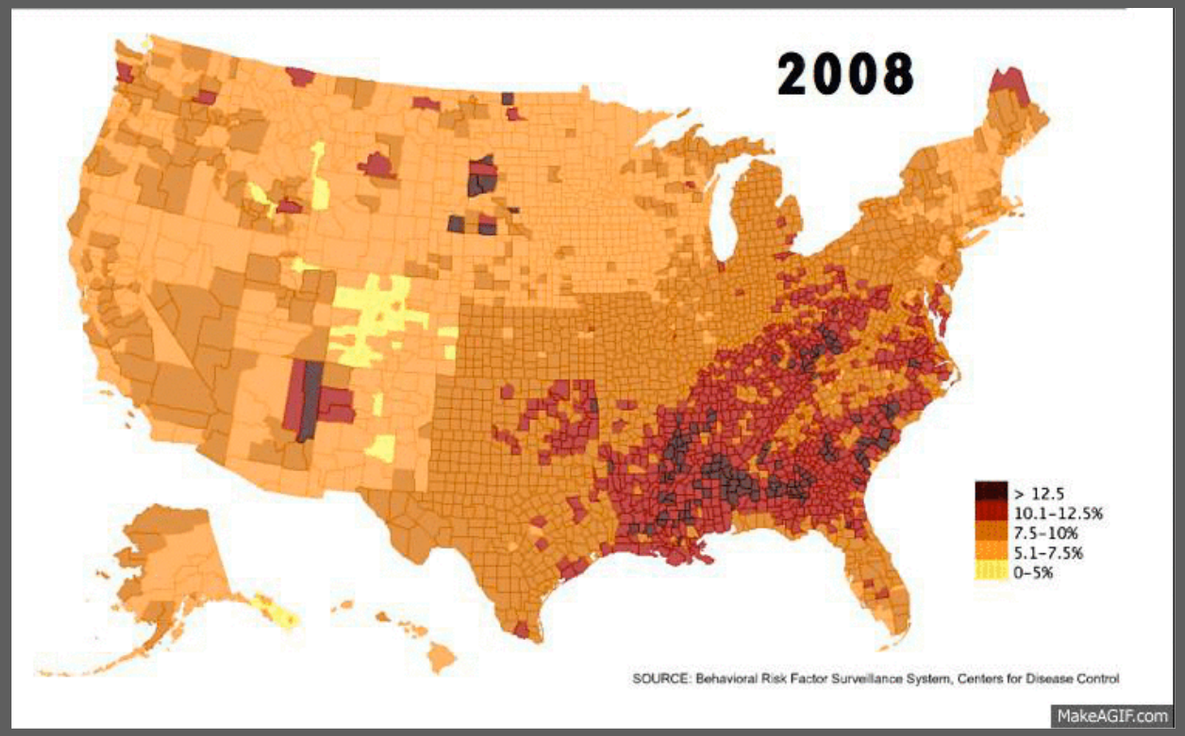
Or, use images from Flickr or iStockPhoto.

NIH: 90+% of cells in *Homo sapiens* are non-human.

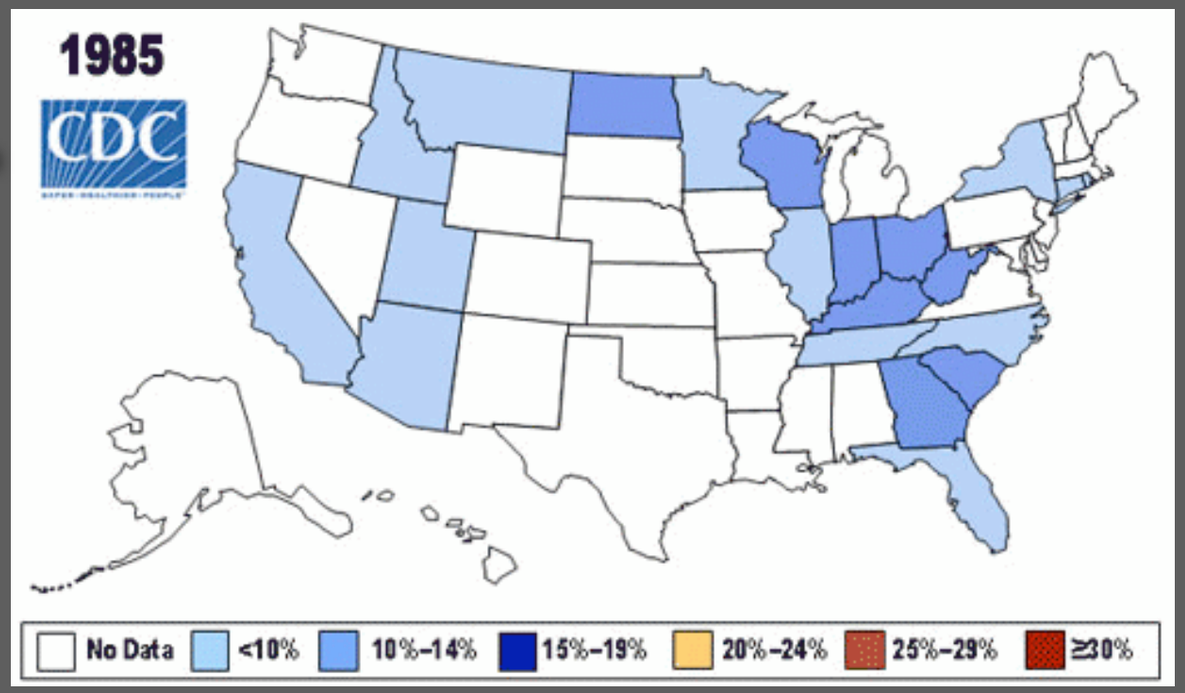
Sources: Michael and Katie Albert flickr

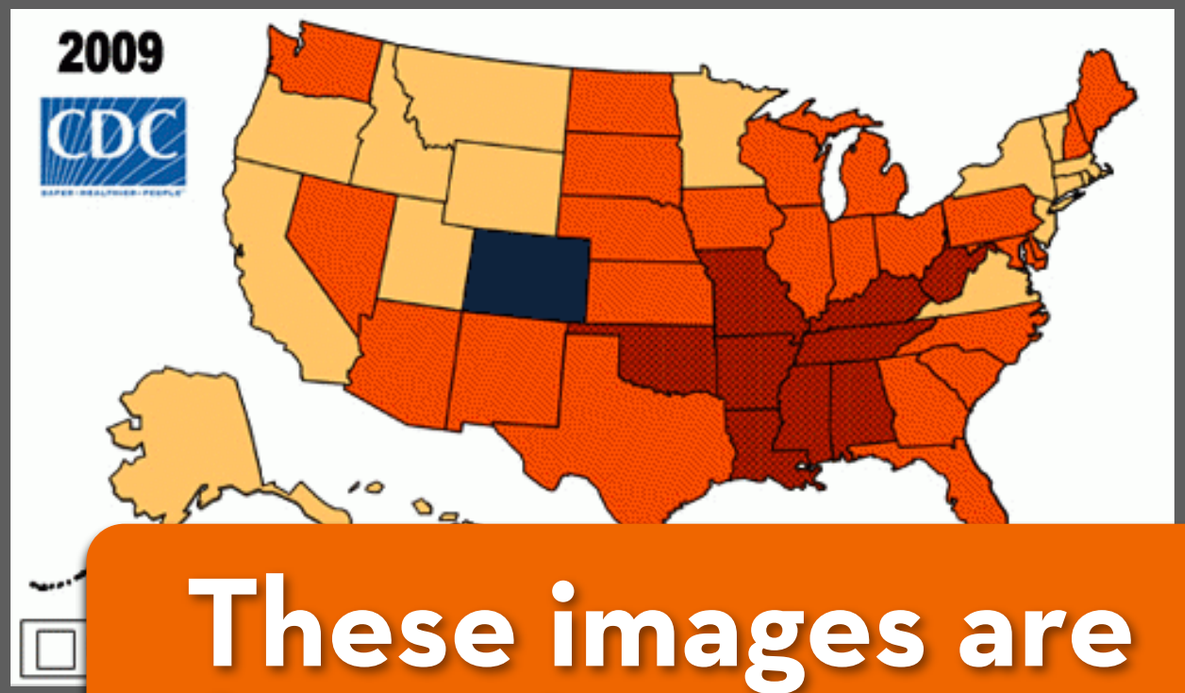
Diabetes





Obesity





These images are from the CDC.

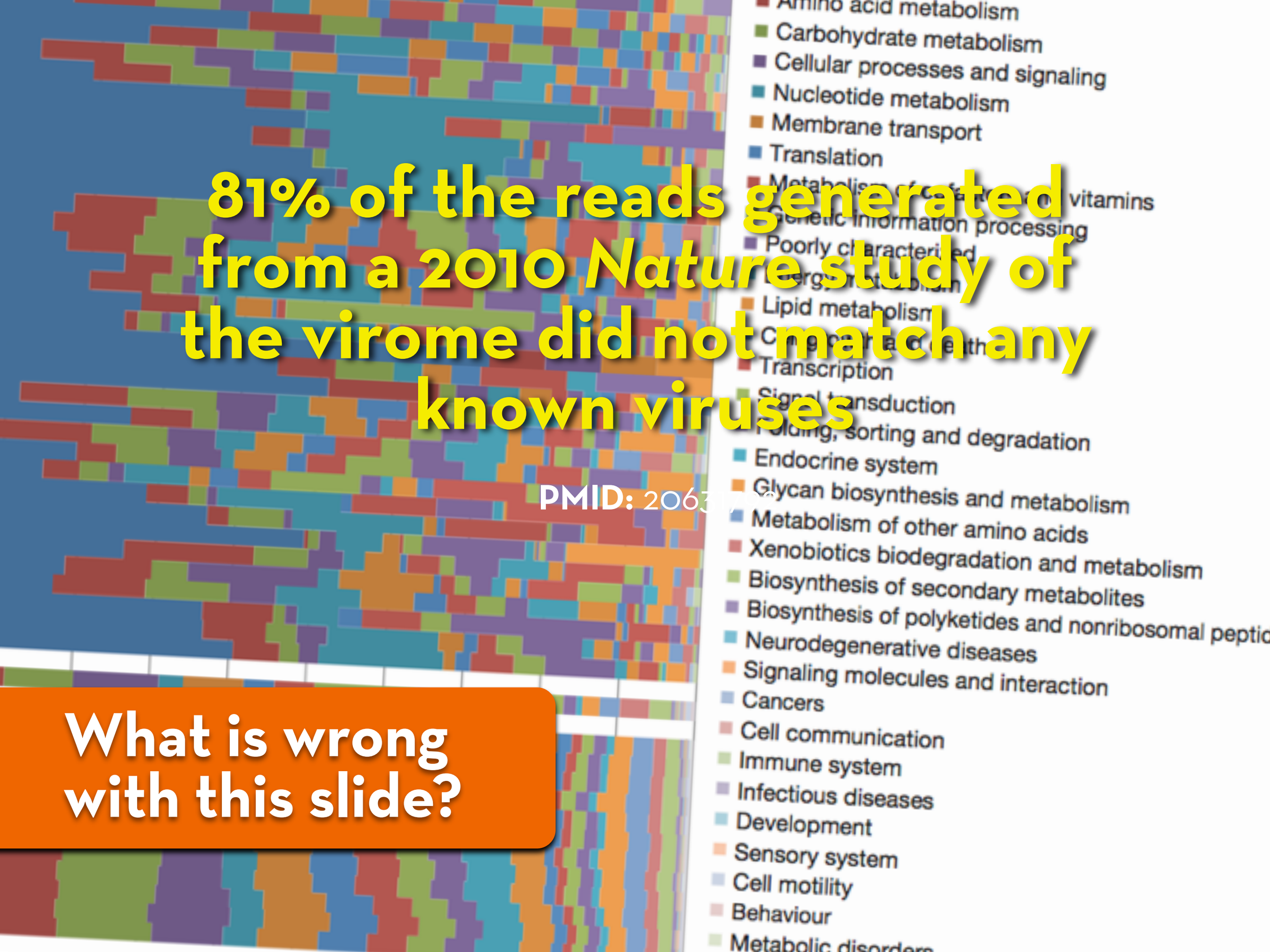
Preserve images' aspect ratio

Good

Boo, hiss, etc.

Image: goo.gl/WMqwK

Use ample contrast



81% of the reads generated from a 2010 *Nature* study of the virome did not match any known viruses

PMID: 2063

What is wrong with this slide?

81% of the reads generated from a 2010 *Nature* study of the virome did not match any known viruses

PMID: 20631792

Ahh, much better

Inflammaging

A process to describe how aging is accompanied by a low-grade chronic, systemic upregulation of the inflammatory response.

Underlying inflammatory changes are common to most age-associated diseases.

What is wrong with this slide?

Inflammaging

A process to describe how aging is accompanied by a low-grade chronic, systemic upregulation of the inflammatory response.

Underlying inflammatory changes are common to most age-associated diseases.

Ahh, much better

Inflammaging

Text has a subtle black shadow (as does this box!)

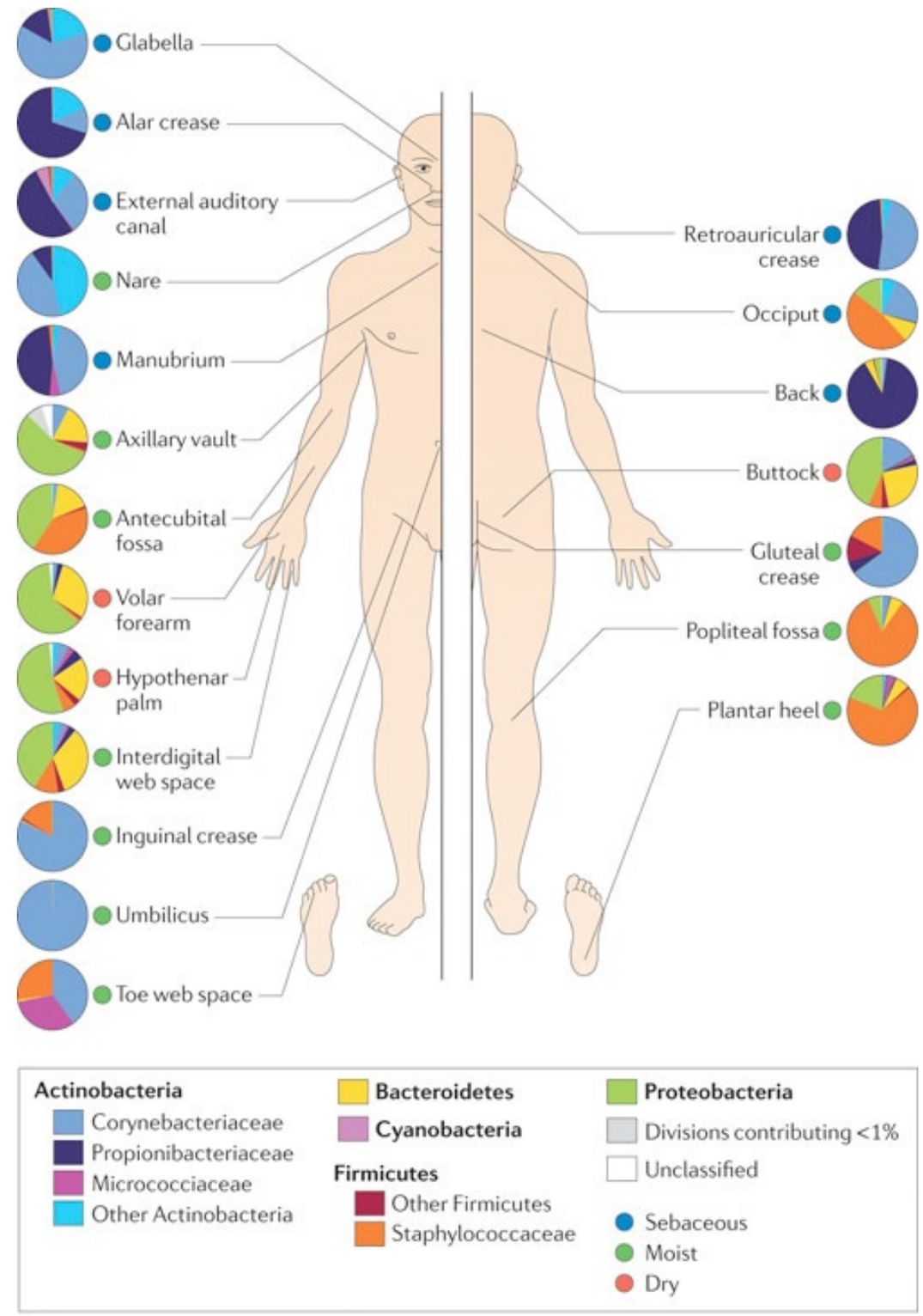
A process to describe how aging is accompanied by a low-grade chronic, systemic upregulation of the inflammatory response.

Underlying inflammatory changes are common to most age-associated diseases.

Image brightness reduced to 43%

Forearms and underarms, though located just a short distance apart, are as "ecologically dissimilar as rainforests are to deserts."

PMID: 19478181



PMID: 21407241

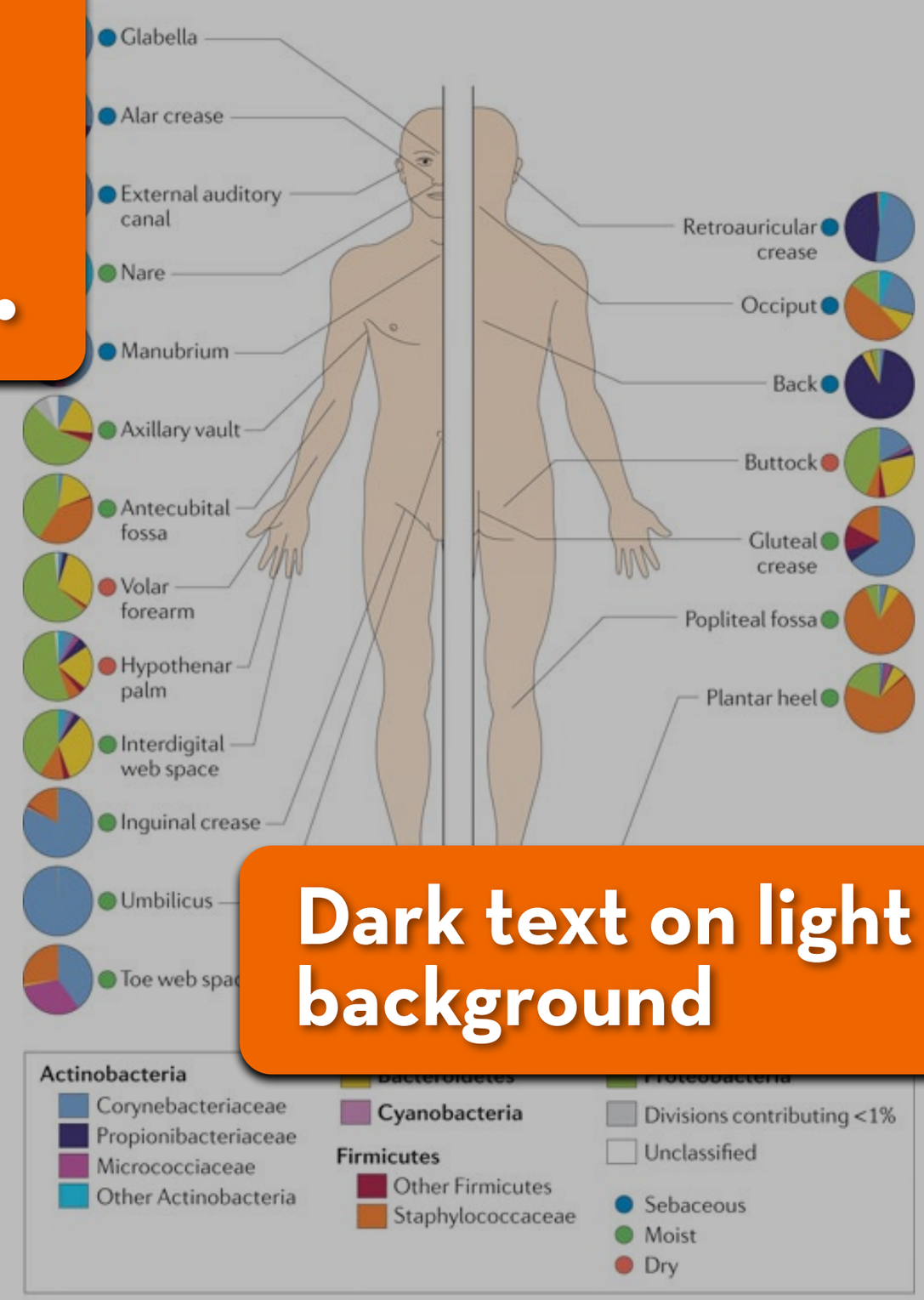
Nature Reviews | Microbiology

Mixing up dark on light, and light on dark pleases the eye.

distance apart, are as "ecologically dissimilar as rainforests are to deserts."

Light text on dark background

PMID: 19478181



Dark text on light background

PMID: 21407241

Nature Reviews | Microbiology

Stick to a color palette

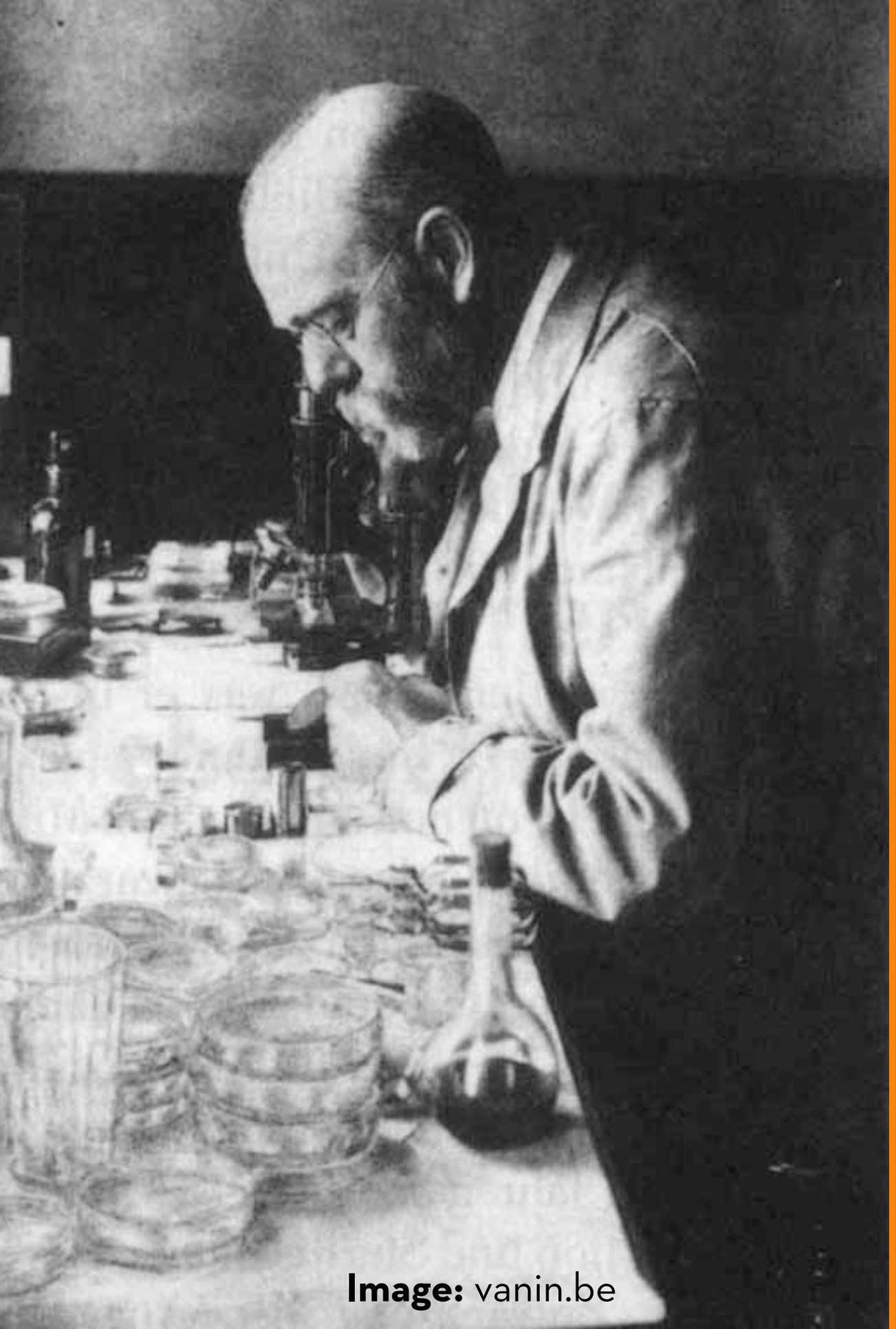
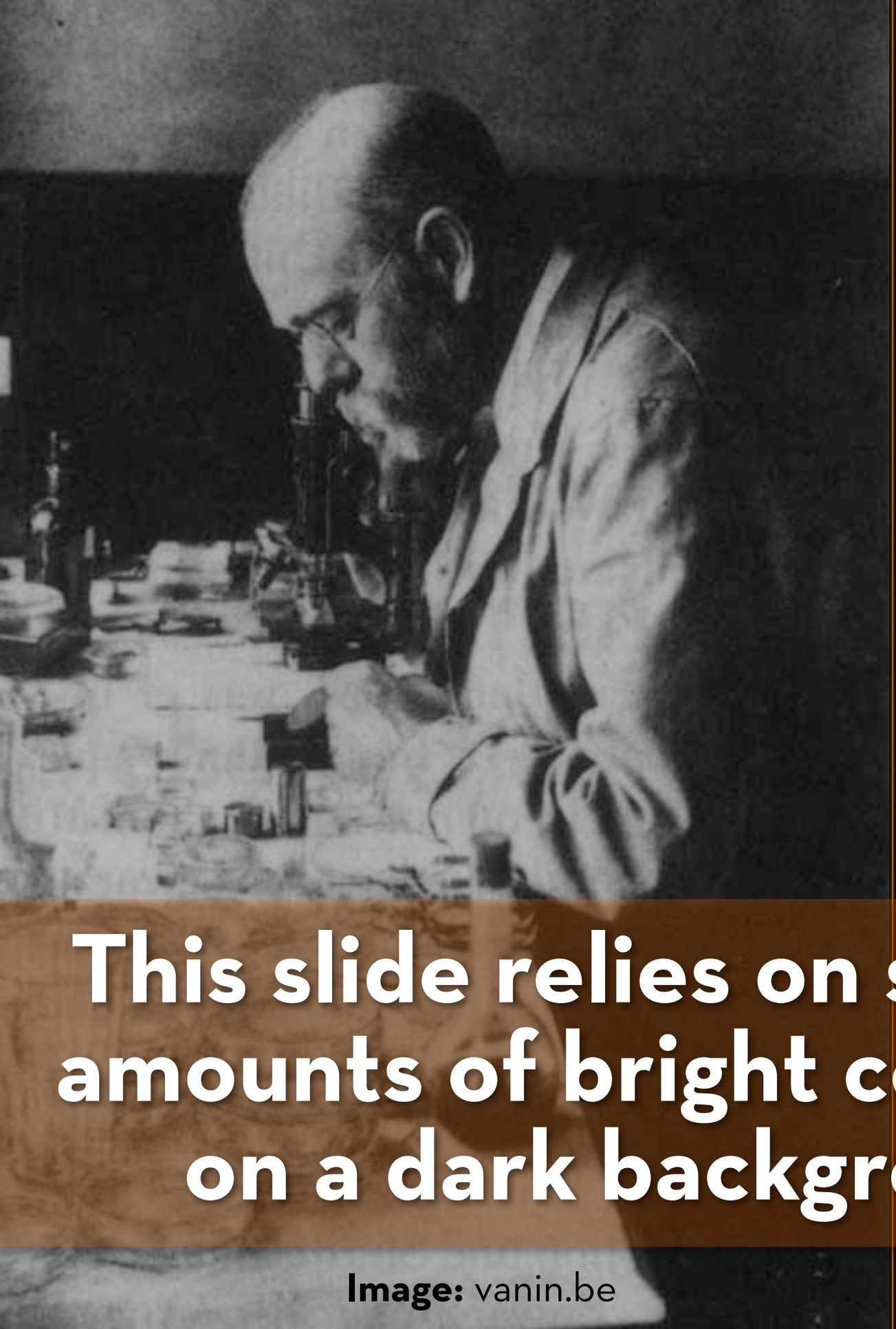


Image: vanin.be

Koch's postulates did not anticipate the presence of a metagenomic microbiota.



Koch's postulates did not anticipate the presence of a metagenomic microbiota.

This slide relies on small amounts of bright colors on a dark background

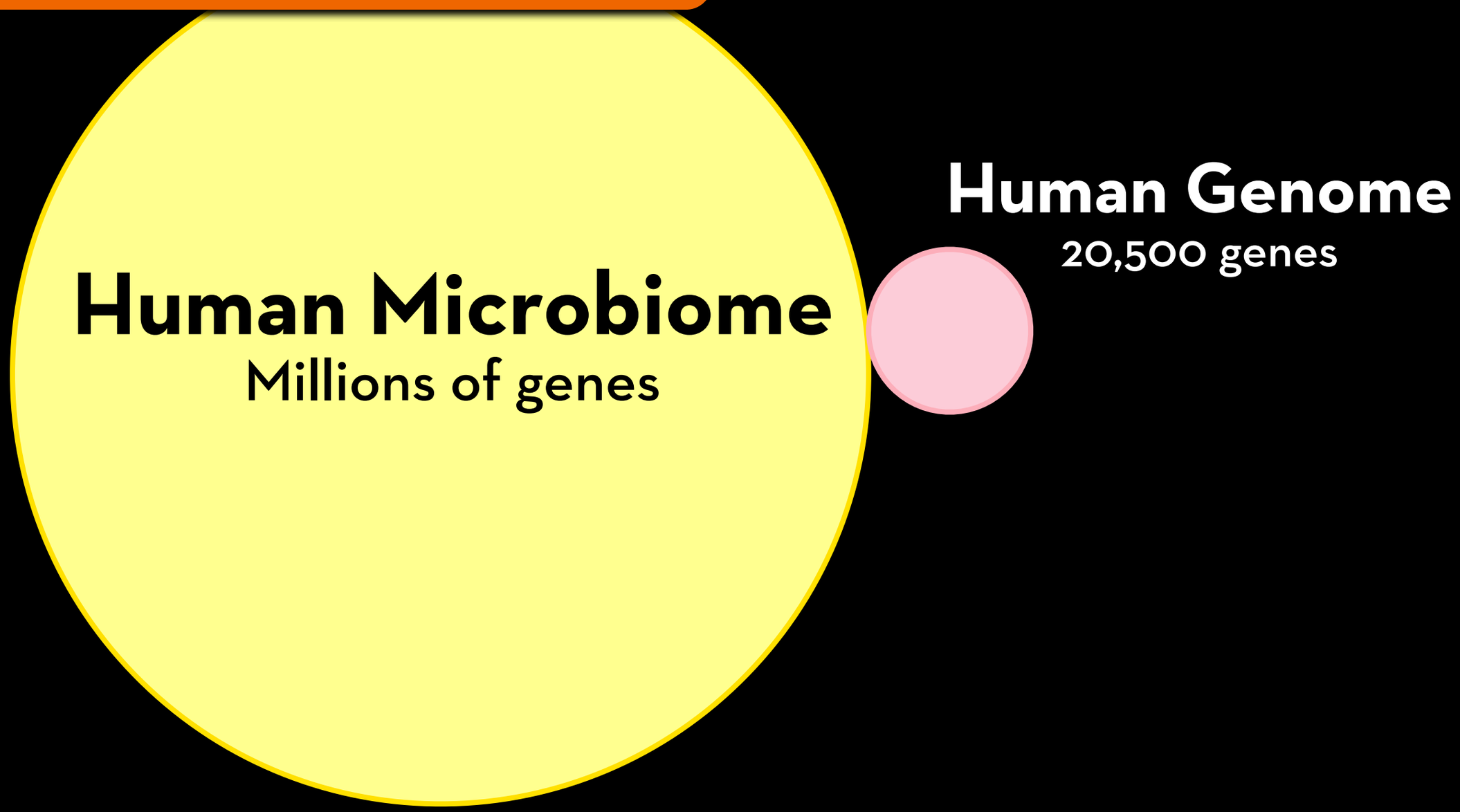
Image: vanin.be

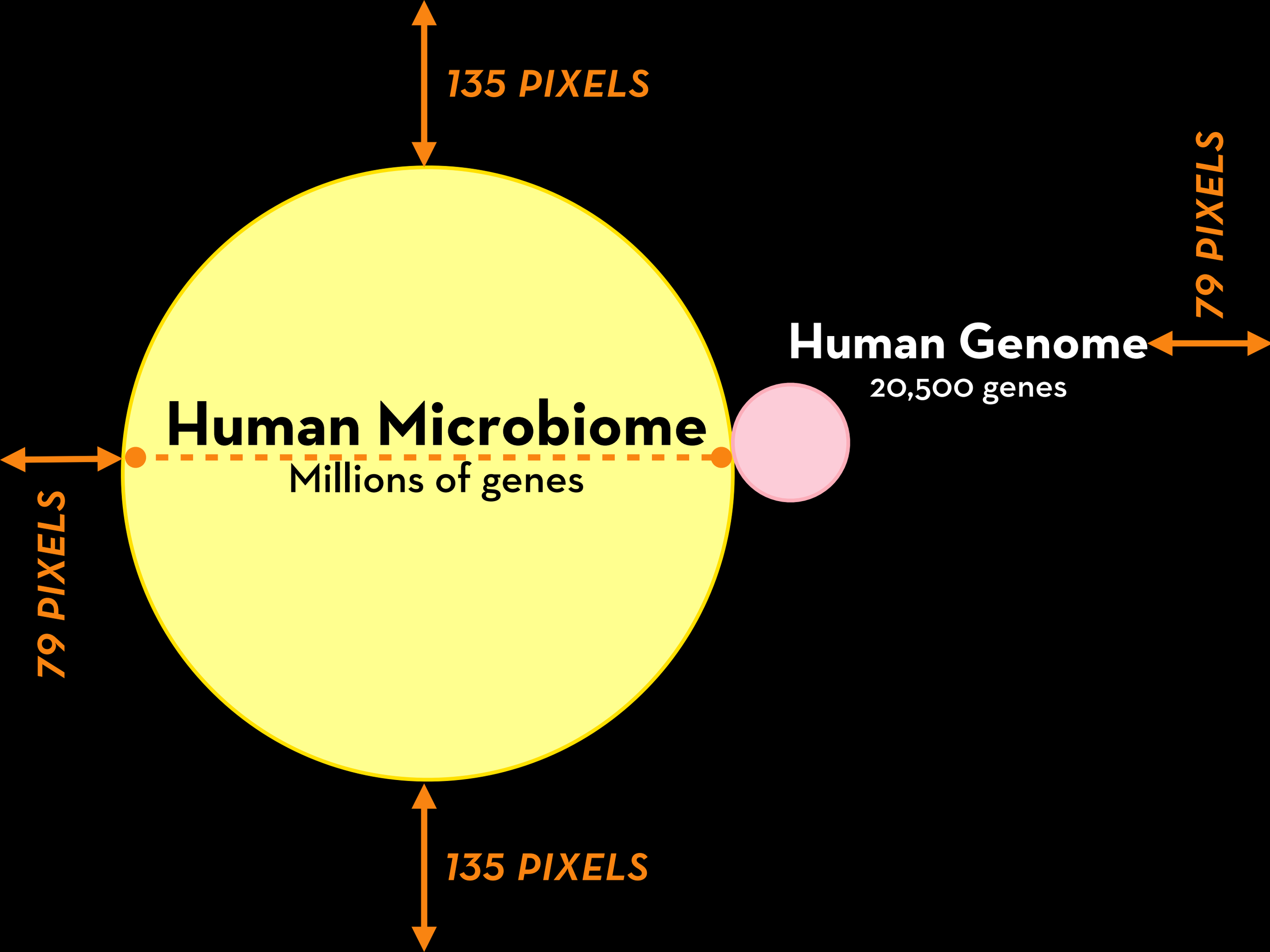
This presentation's color palate

Other combos: kuler.adobe.com

Alignment 101: how to position your visual elements

How is alignment used here?

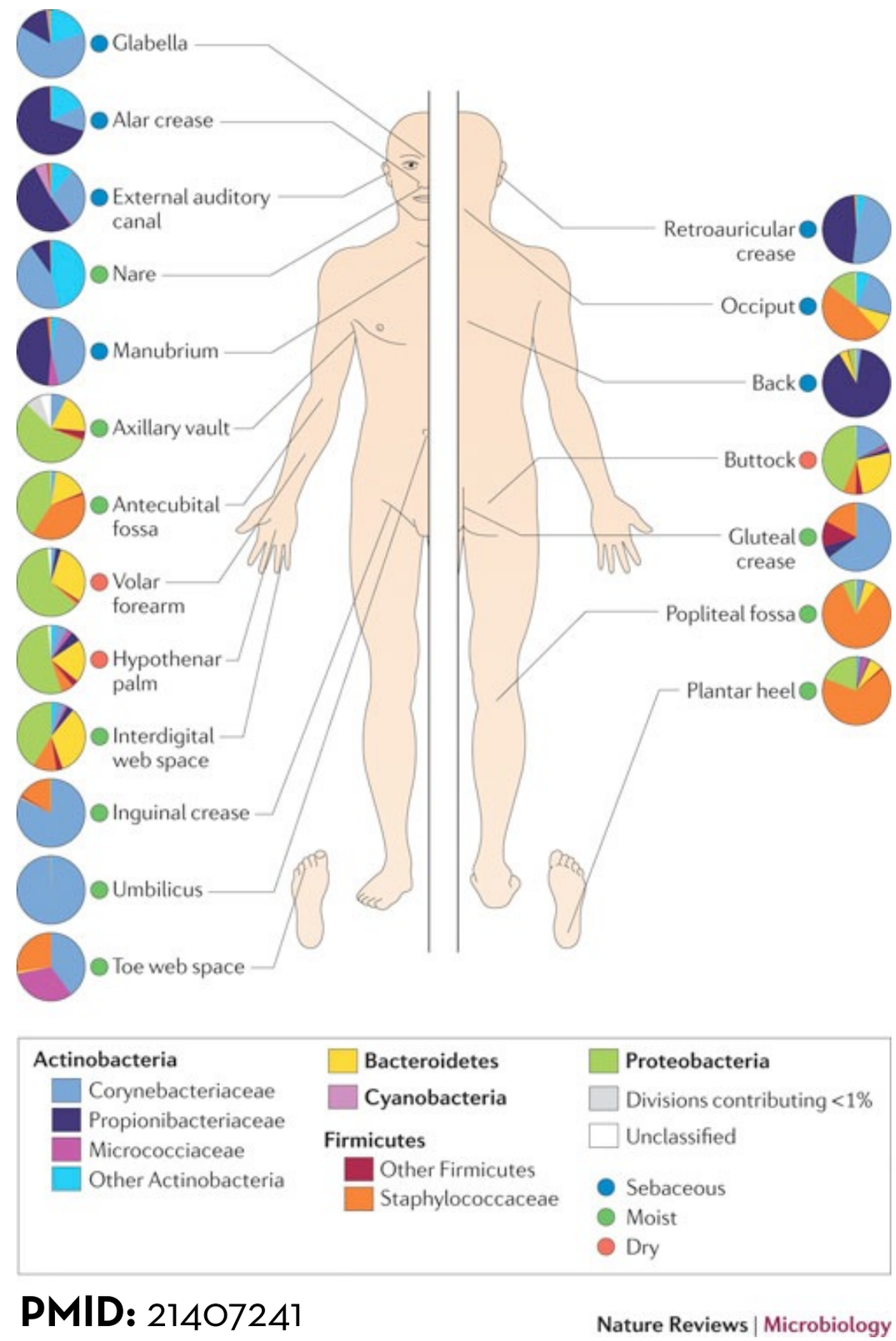



135 PIXELS
79 PIXELS
Human Genome
20,500 genes
Human Microbiome
Millions of genes
79 PIXELS
135 PIXELS

How is alignment used here?

underarms, though located just a short distance apart, are as "ecologically dissimilar as rainforests are to deserts."

PMID: 19478181



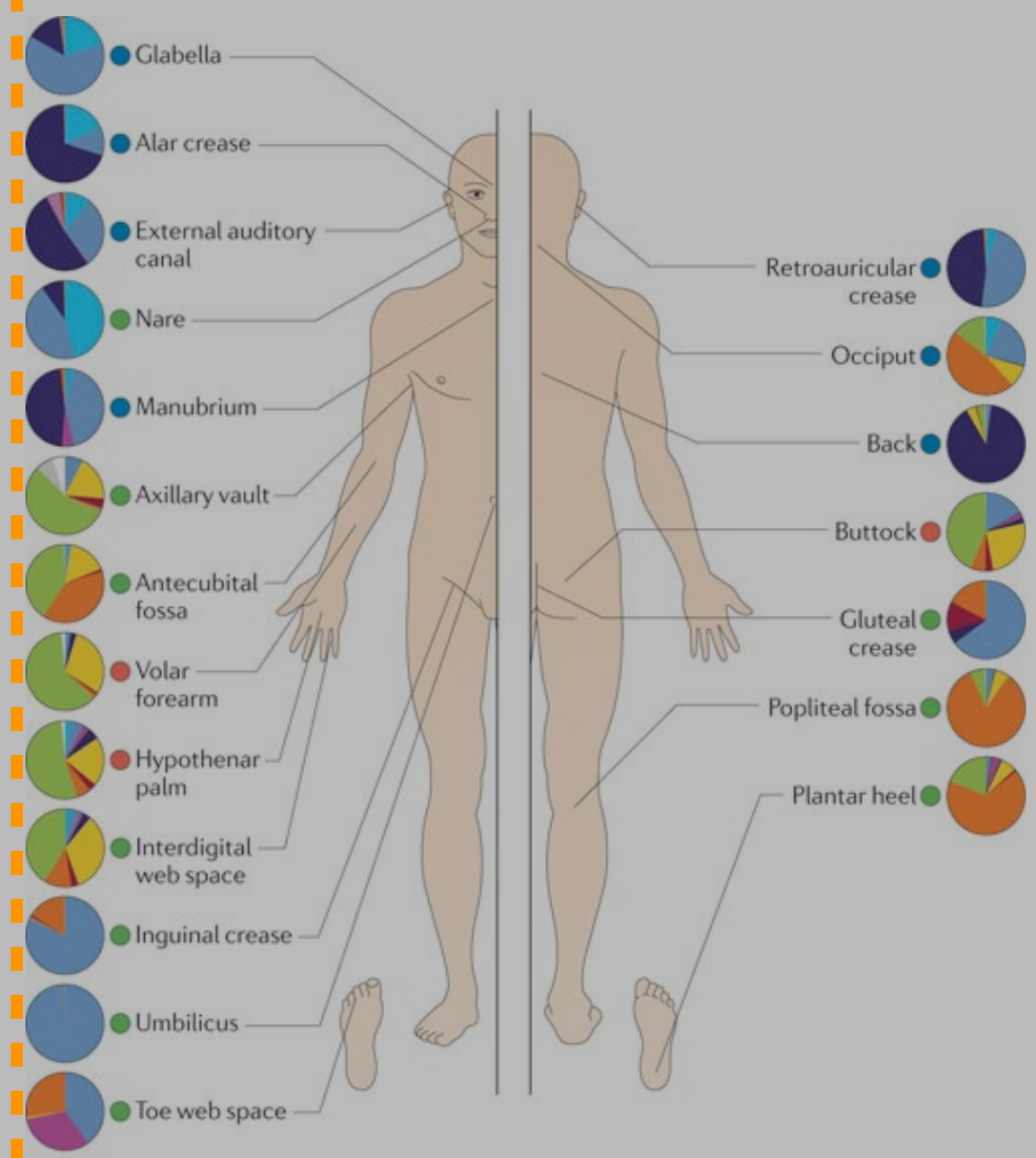
PMID: 21407241

Nature Reviews | Microbiology

Forearms and underarms, though located just a short distance apart, are as "ecologically raintorests are to deserts."

Line bisects page

PMID: 19478181



Align elements when practicable

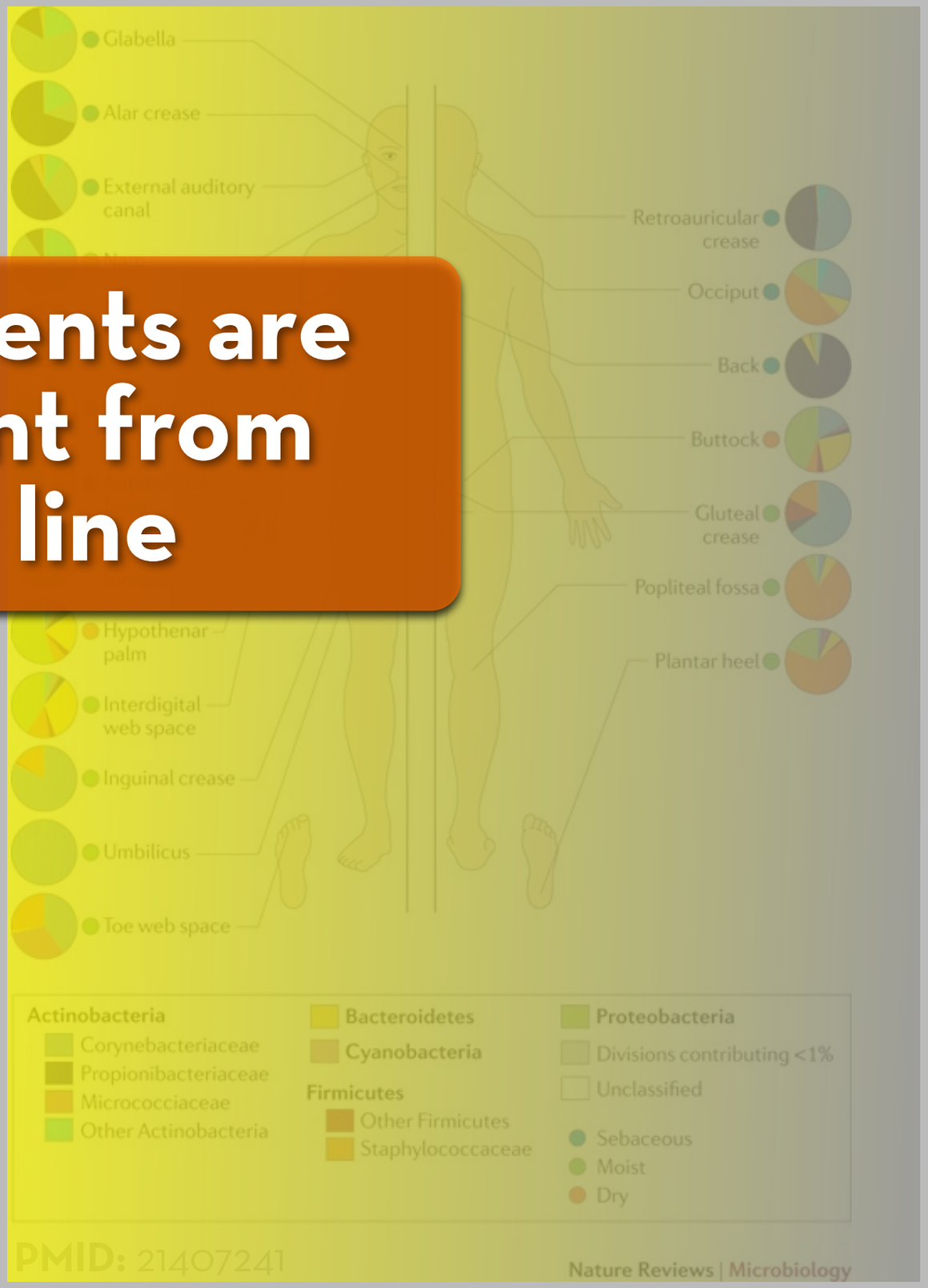
PMID: 21407241

Nature Reviews | Microbiology

Forearms and underarms, though located ju distance ap as "ec dissimilar as rainforests are to deserts."

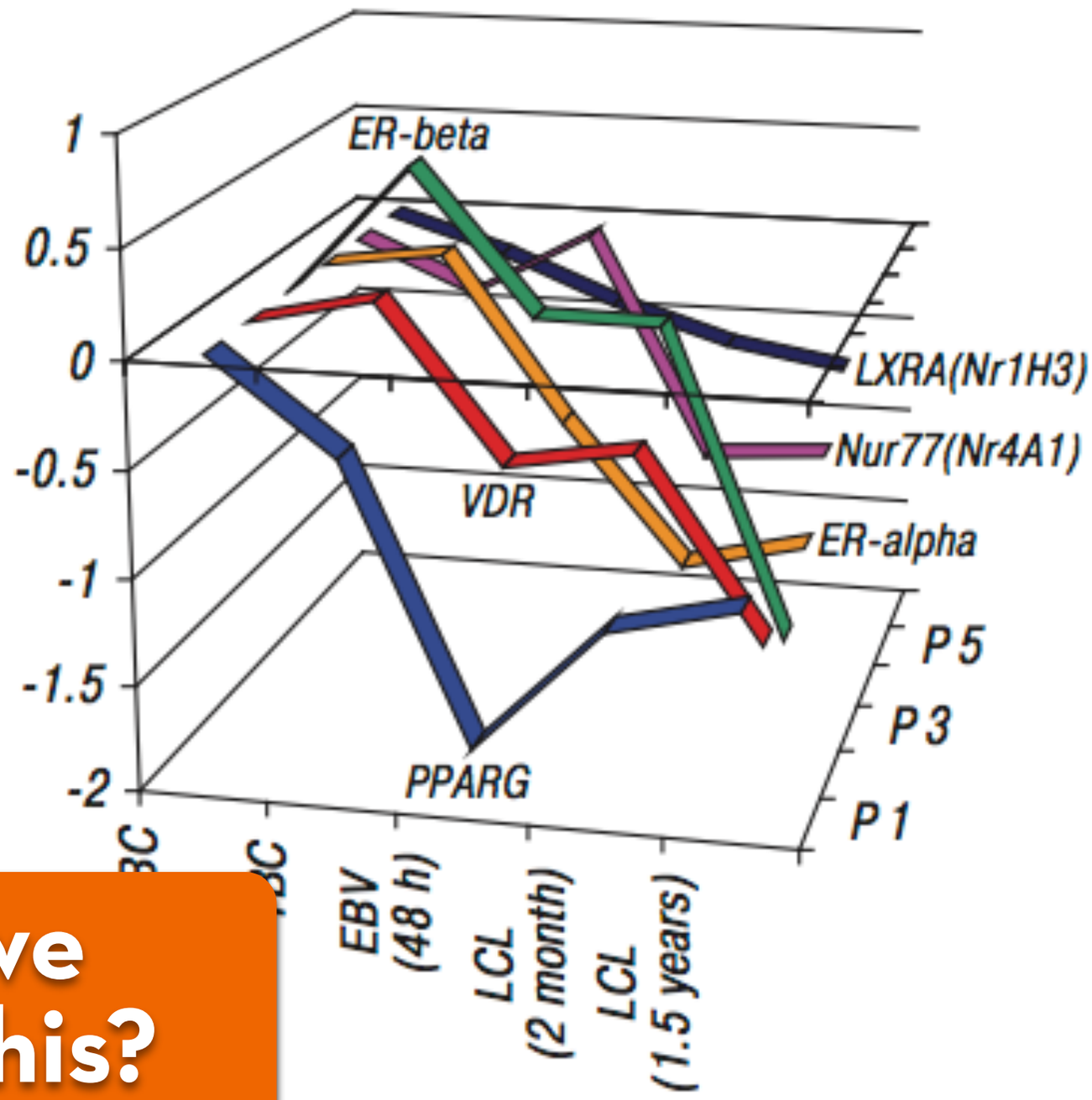
PMID: 19478181

Main elements are equidistant from center line



Use bright colors and cut “chart junk” to create striking graphs

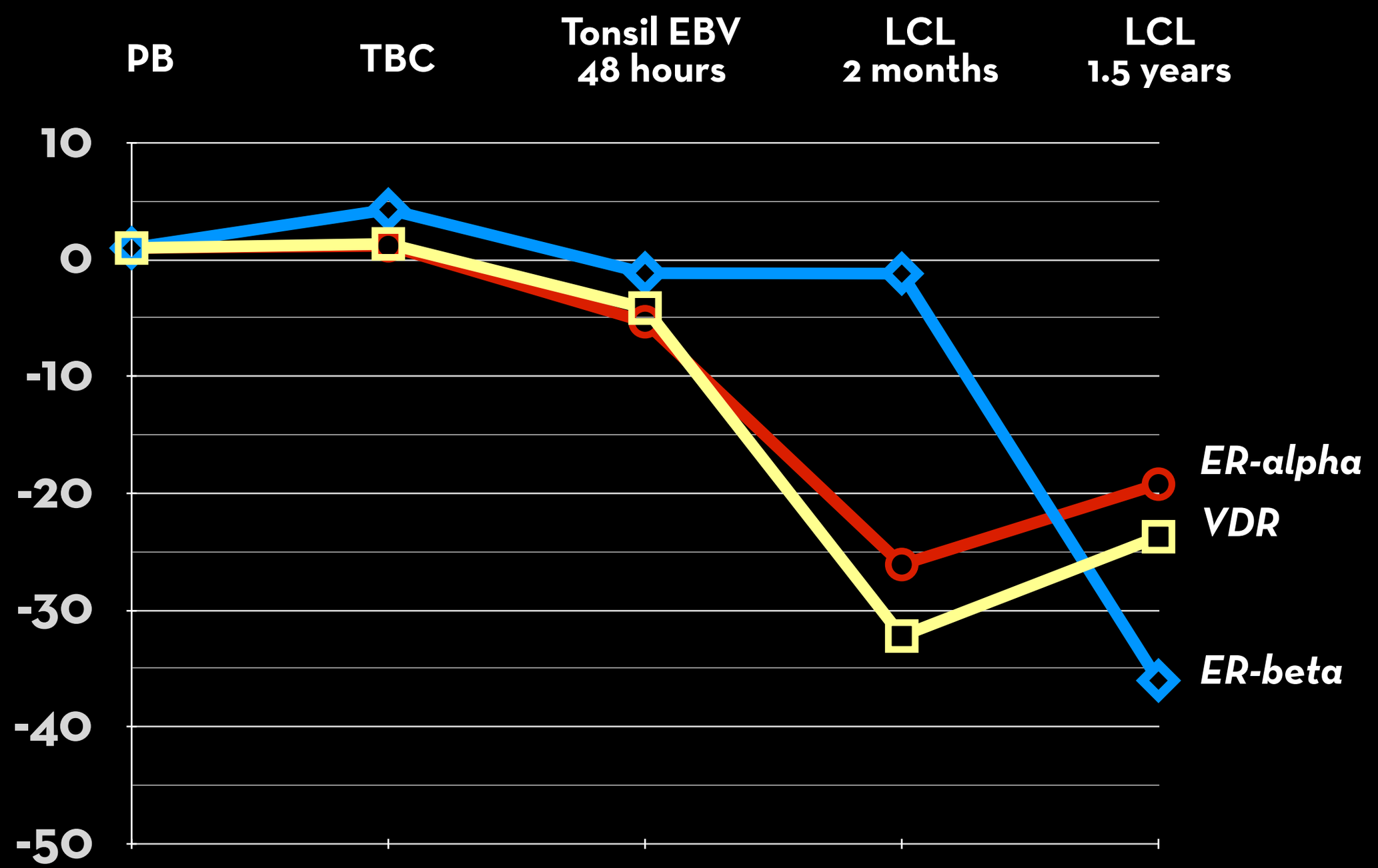
Nuclear receptors' mRNA expression is downregulated upon infection of B-cells with EBV



How can we improve this?

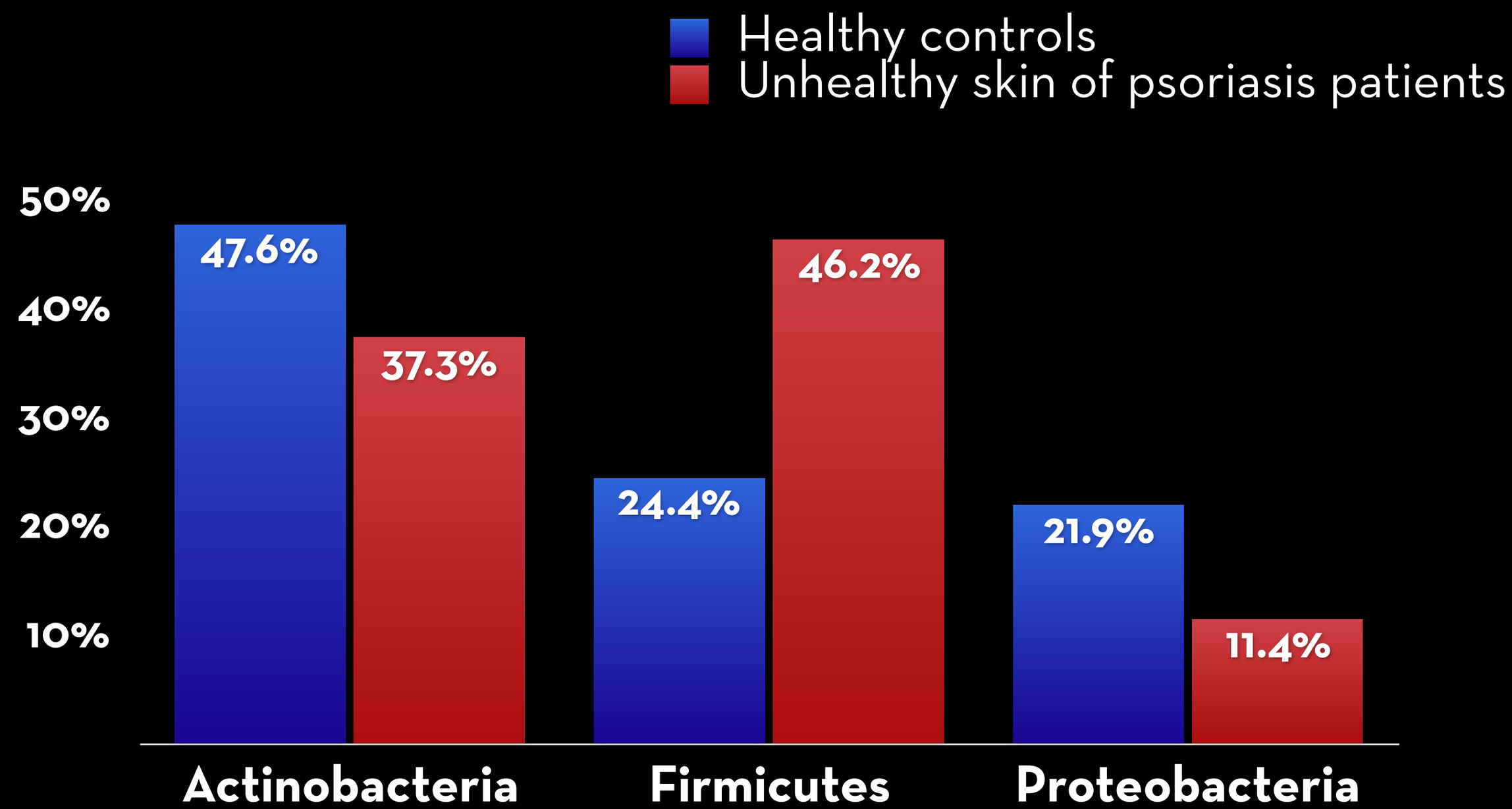
Source: *Experimental Oncology*. 2009; 31(2): 92-96.

Nuclear receptors' mRNA expression is downregulated upon infection of B-cells with EBV



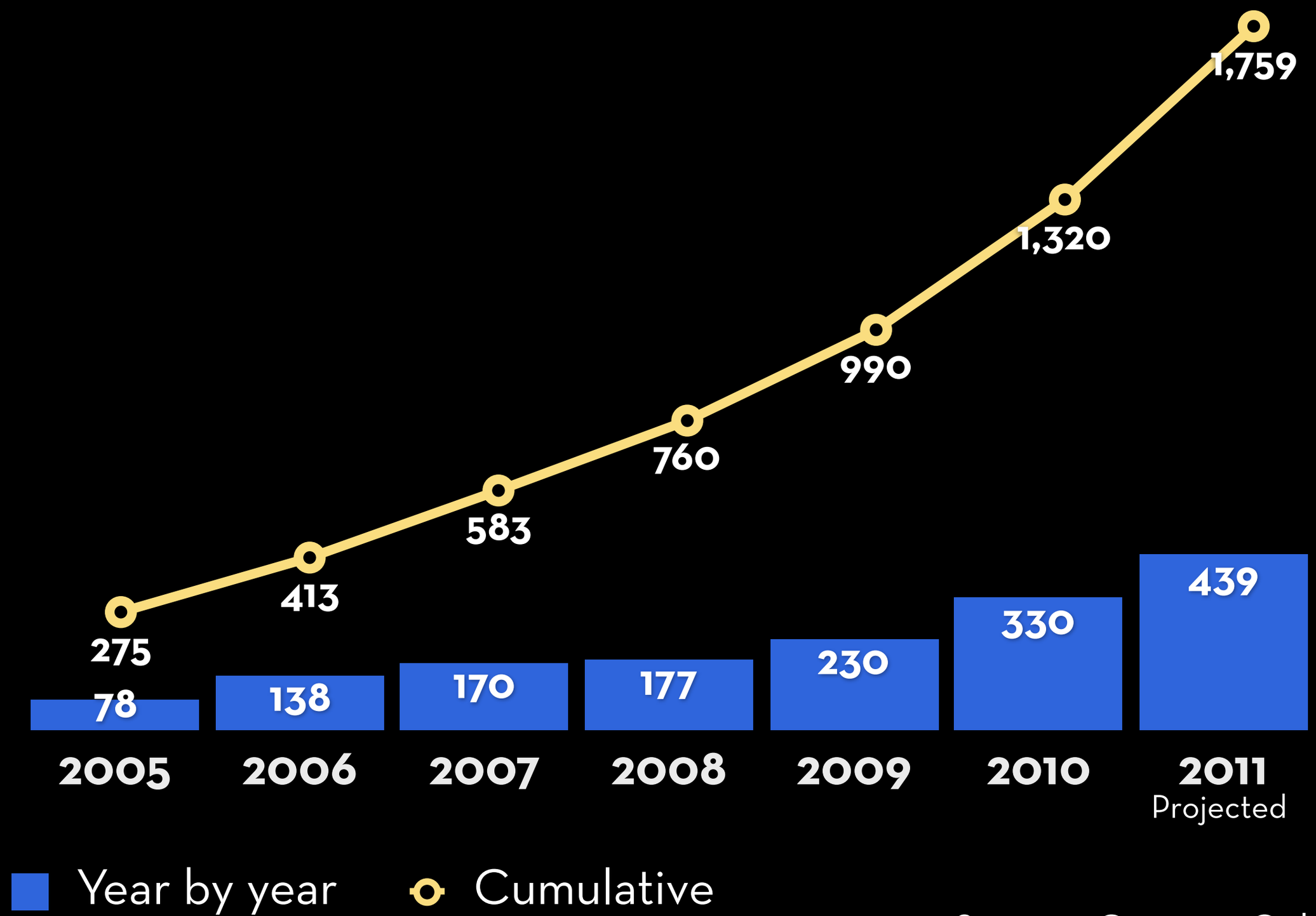
Source: *Experimental Oncology*. 2009; 31(2): 92-96.

Bacterial composition of psoriatic vs. healthy skin by select phyla



Source: PLoS ONE. 2008; 3(7): e2719

Published bacterial genomes



Source: GenomesOnline.org

Creating striking tables

“Autoantibodies” target microbes

Antibody	Shown to be generated in response to...	PMID
RO, La, dsDNA	Epstein-Barr virus (EBV)	17917546
RF	A variety of viral, bacterial, and parasitic infections Chronic infections Subacute bacterial endocarditis	9198668 8898963 214511
anti-EBNA-1	Lupus-specific autoantigens such as Sm or Ro	17121489
antibodies against annexin-V, prothrombin and laminin	Acute infections in patients without autoimmune disease	17121489
IgG or IgA autoantibodies against ghrelin, leptin, vasopressin, and insulin	Over 30 microbes including *Lactobacilli, H. pylori, E. coli, Yersinia pseudotuberculosis*, and *Listeria monocytogenes*	18262391

targe

Different fonts from same family

Brightly colored header row

Antibody	Shown to be generated in response to...	PMID
RO, La, dsDNA	Epstein-Barr virus (EBV)	17917546
RF	A variety of viral, bacterial, and parasitic infections Chronic infections Subacute bacterial endocarditis	9198668 8898963 214511
anti-EBNA-1	Lupus-specific autoantigens such as Sm or Ro	17121489
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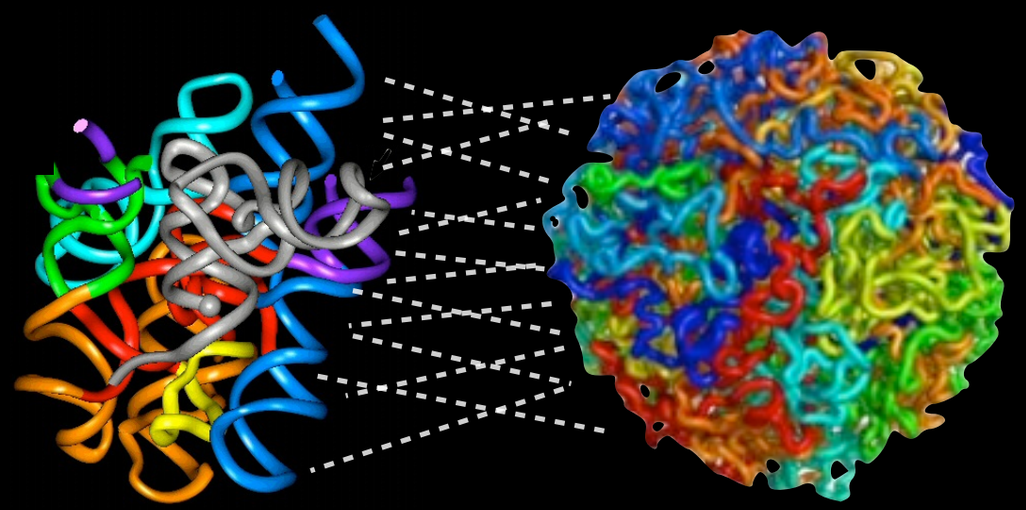
IgG or IgA autoantibodies against ghrelin, leptin, vasopressin, and insulin	Over 30 microbes including *Lactobacilli, H. pylori, E. coli, Yersinia pseudotuberculosis*, and *Listeria monocytogenes*	18262391

Subtle striping of rows

Holy Grail: use design to simplify complex concepts

The Interactome

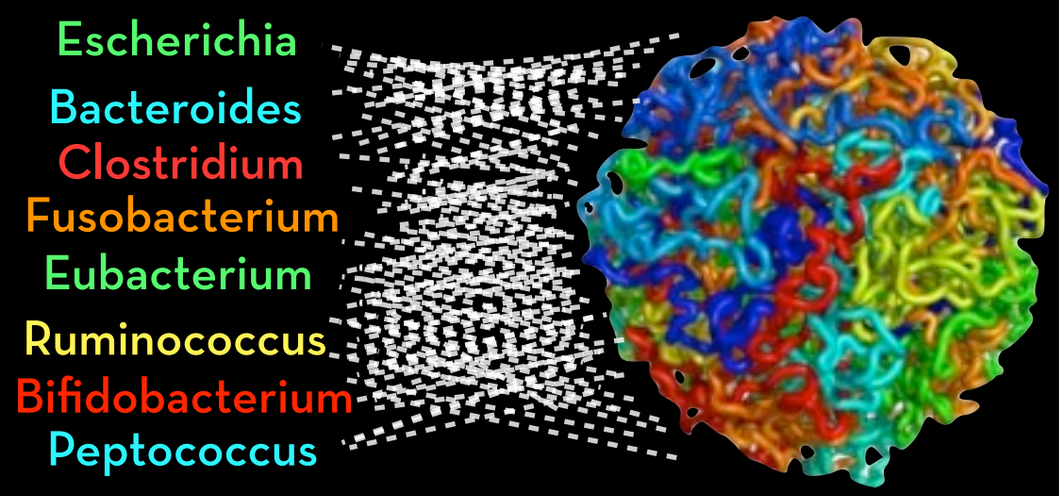
1,443 direct interactions



HIV
19 proteins

Homo sapiens
100,000 proteins

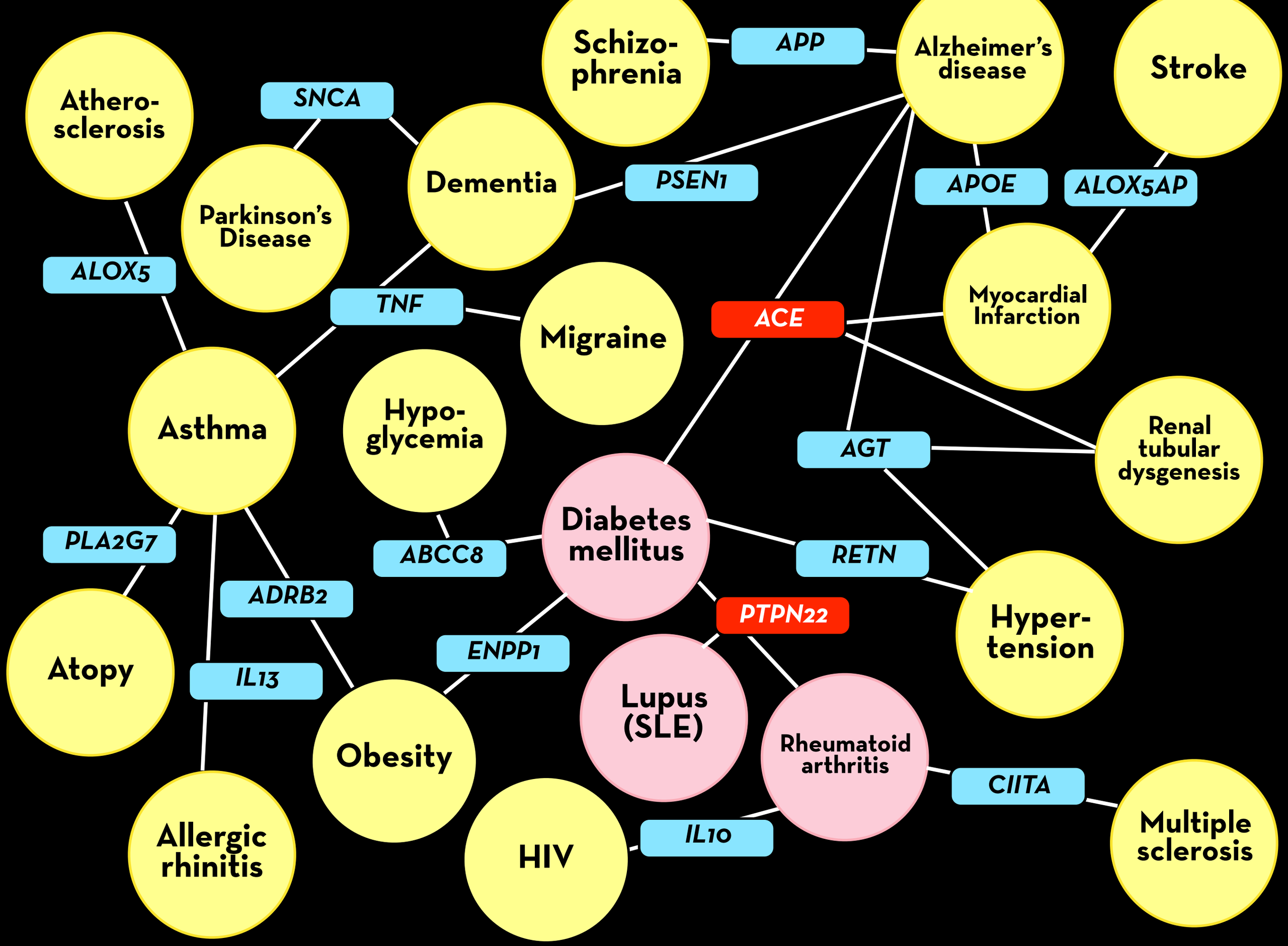
$10^{??}$ interactions



Gut microbiome
9 million unique genes

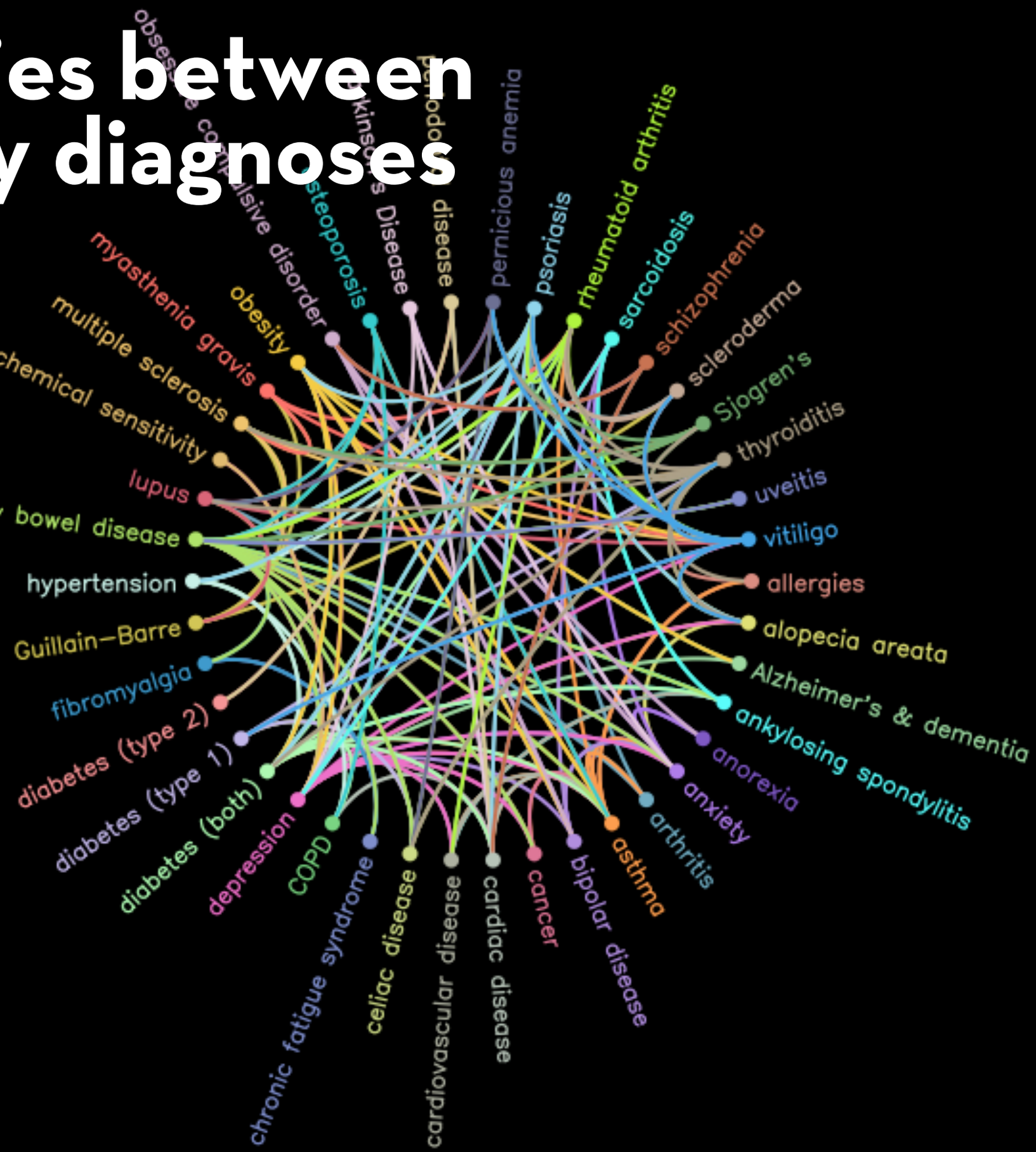
Homo sapiens
100,000 proteins

PMID: 19025396


Schizo-phrenia
APP
Alzheimer's disease
Stroke
Athero-sclerosis
SNCA
Dementia
PSEN1
APOE
ALOX5AP
Parkinson's Disease
ALOX5
TNF
Migraine
ACE
Myocardial Infarction
Asthma
Hypo-glycemia
AGT
Renal tubular dysgenesis
PLA2G7
ABCC8
Diabetes mellitus
RETN
ADRB2
PTPN22
Hyper-tension
Atopy
ENPP1
IL13
Lupus (SLE)
Rheumatoid arthritis
Obesity
CIITA
Allergic rhinitis
HIV
IL10
Multiple sclerosis

Co-morbidities between inflammatory diagnoses

Source: PubMed



Code: goo.gl/d3k763

Cite research and images

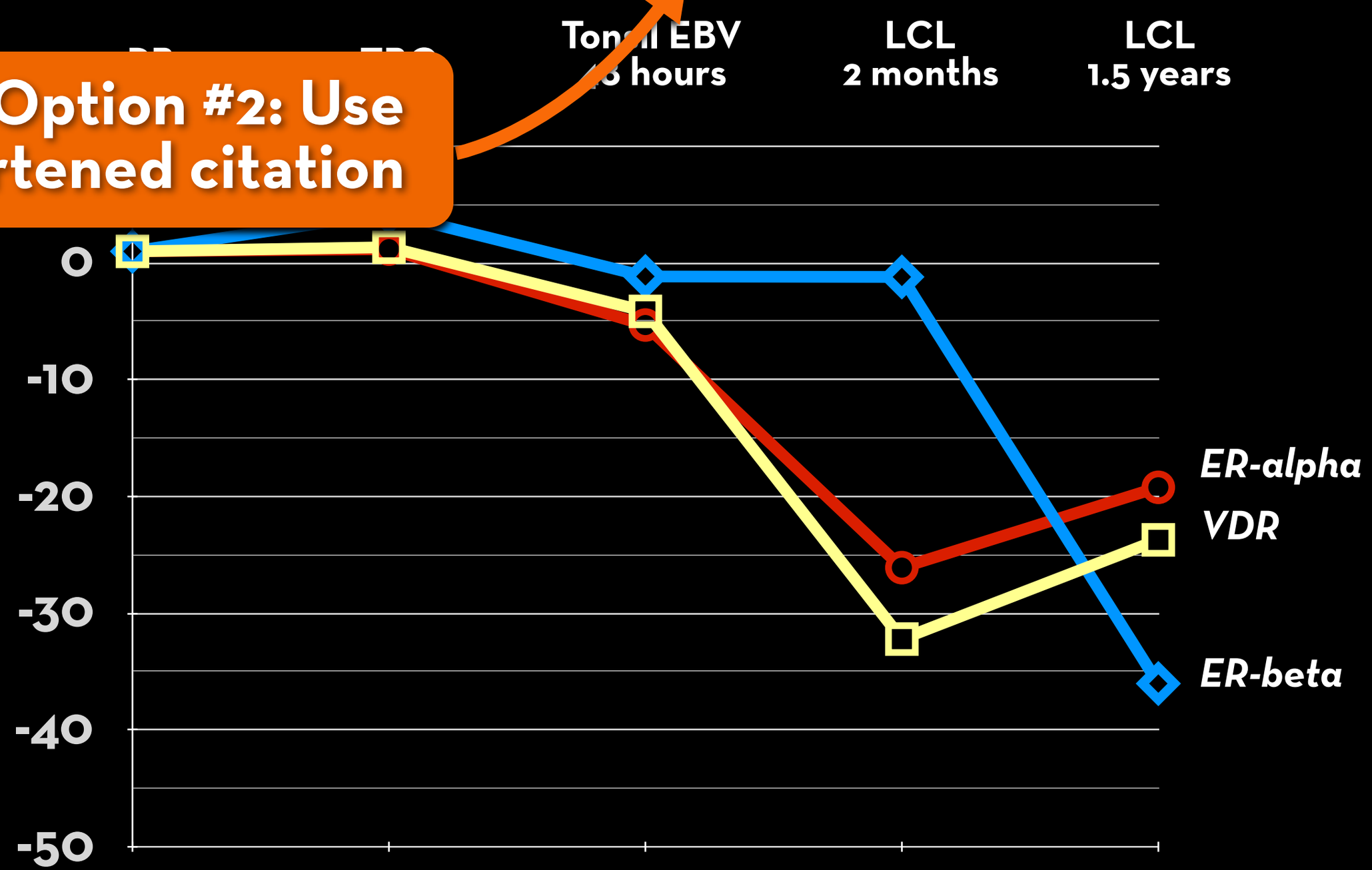
Health vs. disease in the microbiome

Disease	Finding	PMID
Chronic fatigue syndrome	738 unique proteins in cerebrospinal fluid of CFS patients vs. controls	21383843
Celiac disease	Higher levels of *Lactobacillus*, *Enterococcus* and *Bifidobacteria* than in controls	21970810
Diabetes, Type I	Lower diversity in gut bacteria relative to controls. High prevalence of *Bacteroides ovatus*	20613793
Diabetes, Type II	Higher levels of lipopolysaccharides and beta-amyloid, an antimicrobial peptide, than controls.	17090751 18950899
Obesity	Obese humans and mice have a 50% relative reduction in the abundance of *Bacteroidetes* and a proportional increase in Firmicutes.	16033867
Psoriasis	Significant differences in three families of bacteria in infected tissue	18648509

Option #1: Use PMIDs for compact shorthand

Nuclear receptors' mRNA expression is downregulated upon infection of B-cells with EBV

Source: *Experimental Oncology*. 2009; 31(2): 92-96.



Option #2: Use shortened citation

The Vitamin D Receptor

- expresses many genes connected to autoimmune diseases and cancers
- regulates expression of several families of key antimicrobial peptides
- TLR2 TLR4 expression

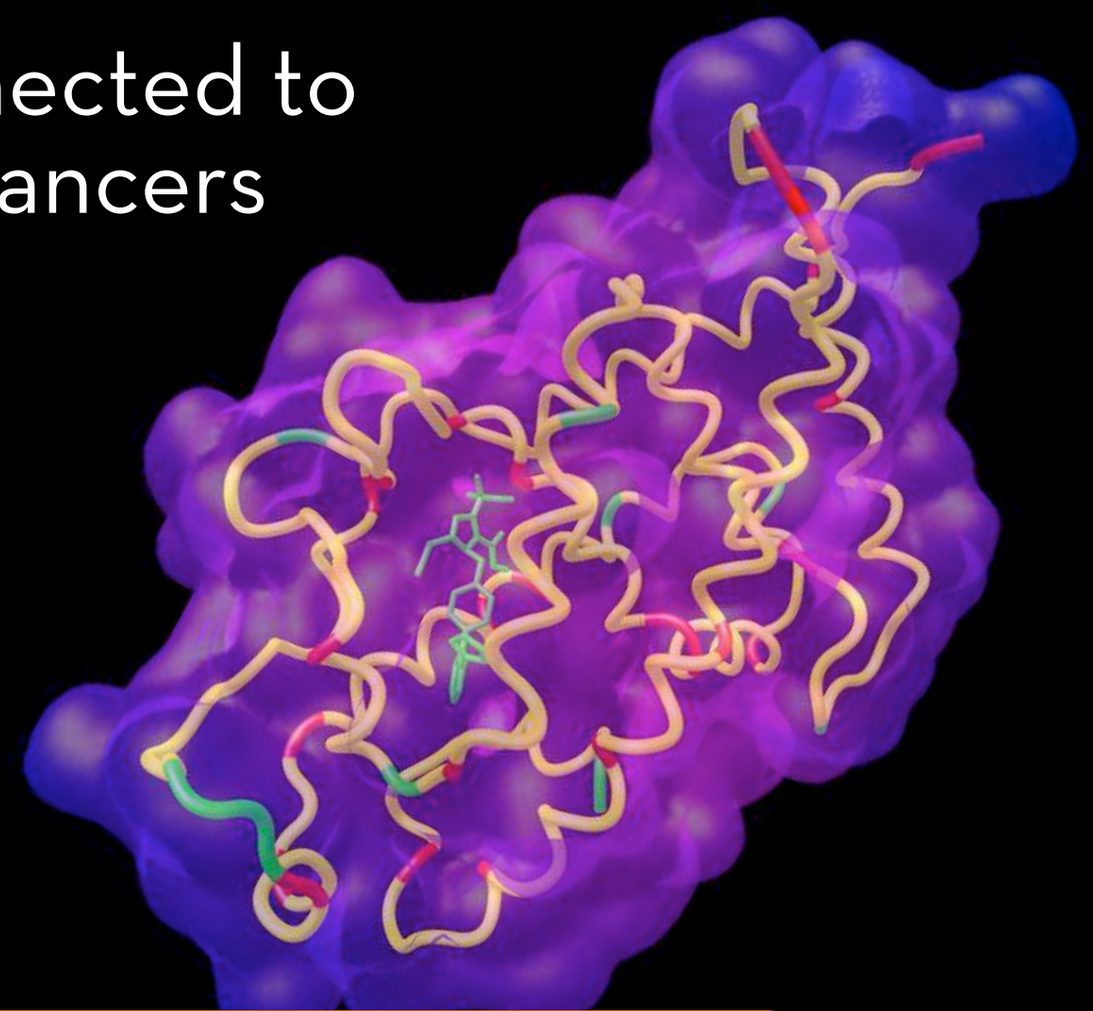
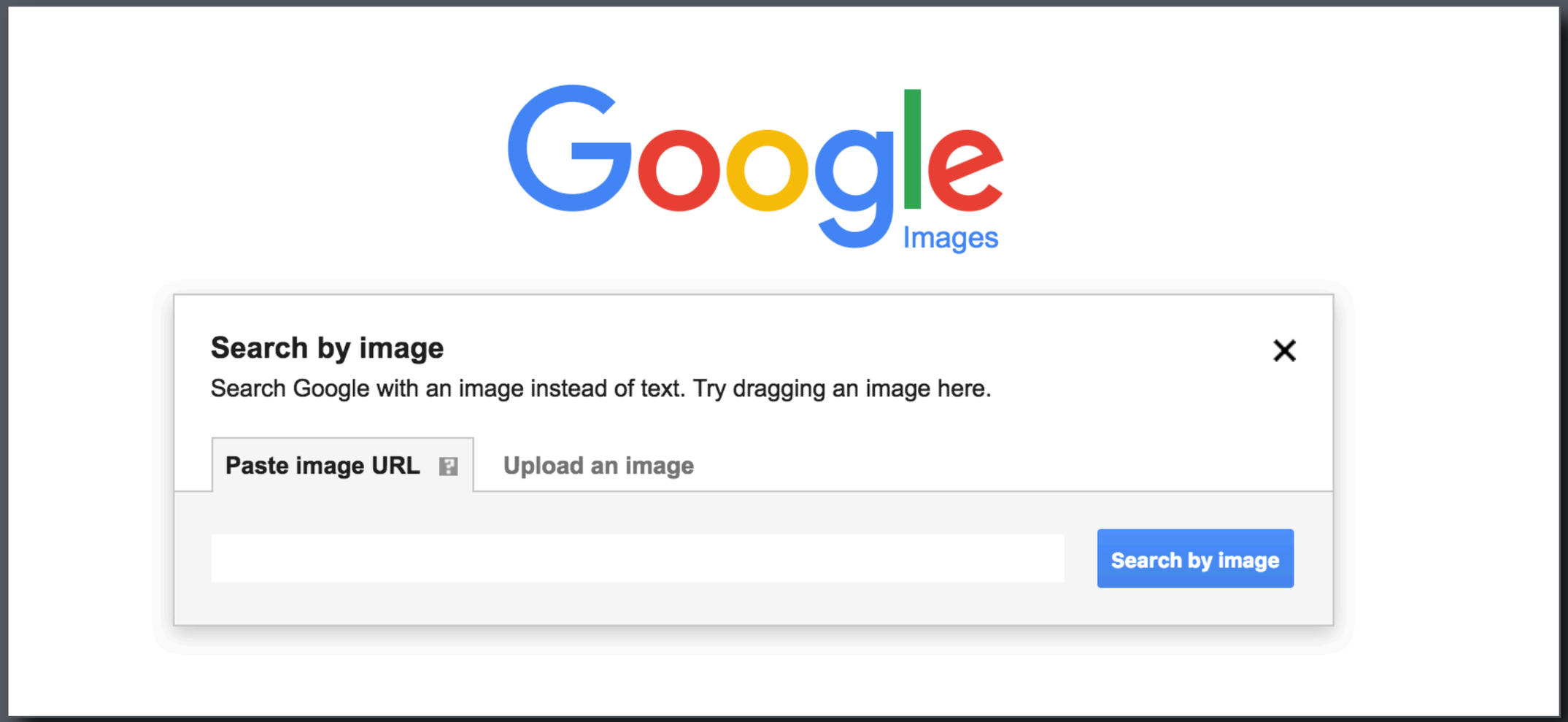


Image: Trevor Marshall

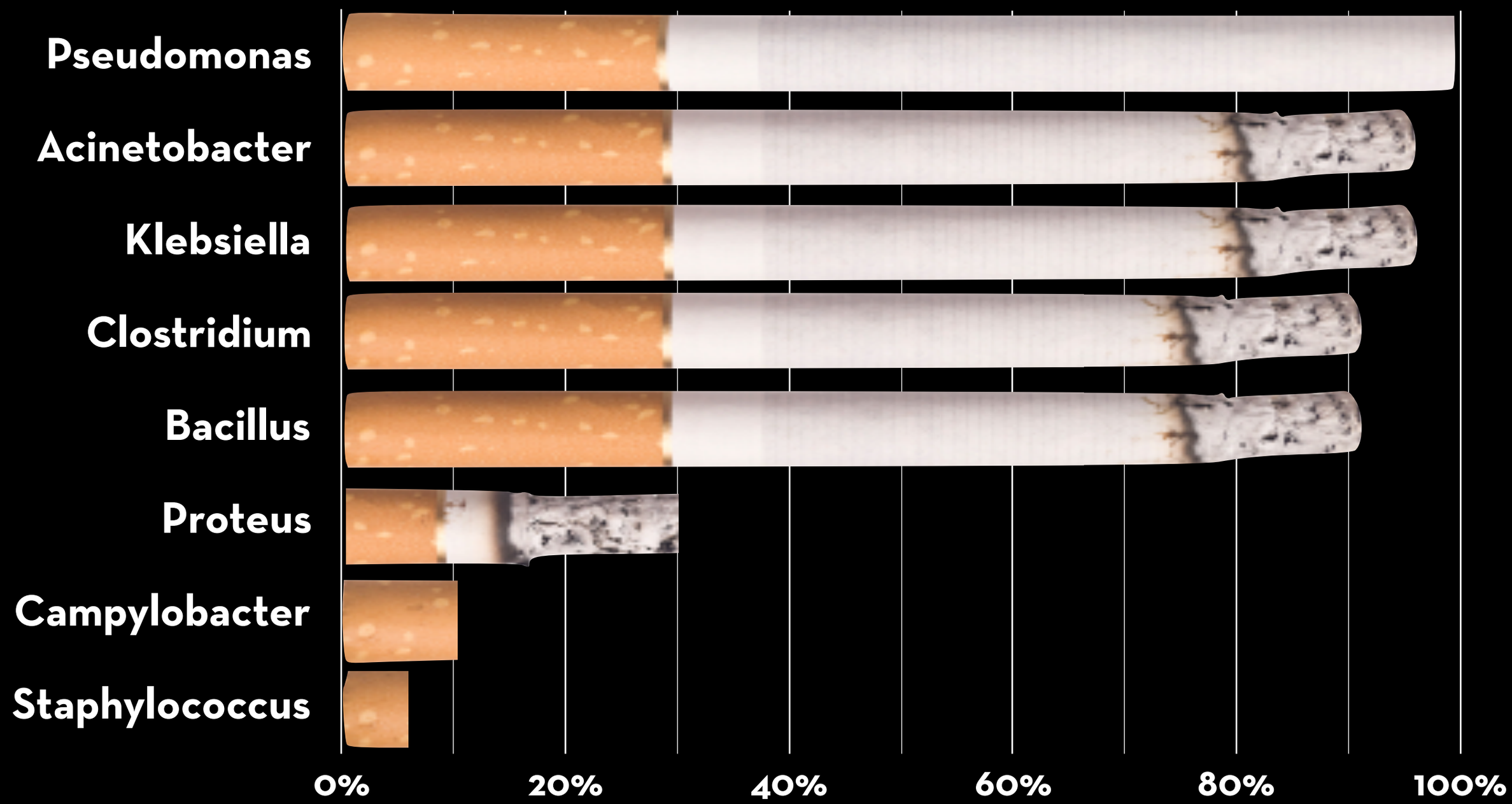
Cite your images too!

Google Images lets you do a reverse image search



Strive for slides that make an indelible impression

Select bacteria in commonly smoked cigarettes



Source: Environ Health Perspect. 2010 Mar;118(3):351-6.

Available tools

PowerPoint

- The industry standard; should be on every display computer
- Not particularly user friendly

Keynote

- Only on (some) Macs
- Lots of great tools; easy to quickly create great presentations
- Can export to PowerPoint but some features not supported

Prezi

- For presenters who are impressed by animations and think their audience will be too
- “Portable Prezi” available
- May require Dramamine

PDF

- Should be on every display computer
- Best of both worlds: export Keynote to PDF
- Color is okay but not perfect

Proud of your slides? Share them!

Share your slides with shortened URLs

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2. Upload them to a public site. Options:
   - Cornell's e-Commons
   - Slideshare
   - Dropbox

Available here: goo.gl/uFFRL8

Review what you did

Agenda

- **Thesis and narrative**
- **Connecting with your audience**
- **Speaking style** – know your content, don't read from your slides
- **Slide structure**
- **Visual considerations** – big fonts, ample contrast, minimalism…
- **Reinforce your key points**
- **Now you try!**

Thanking the audience

Never thank your audience for paying attention as that implies weakness.

Now, you try!

Use the institutional template to rescue this slide

http://bit.ly/fixme55

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Microbiome in autoimmune diseases

Significant differences can be found in the microbiomes of patients with autoimmune diseases such as diabetes types I [18] and II [19], Crohn's [20], ulcerative colitis, and psoriasis [21]. Even the composition of the cerebrospinal proteome is significantly altered in autoimmune disease. Schutzer et al. found that while healthy subjects, and patients with chronic fatigue syndrome (CFS) [22], harbored many of the same proteins in the cerebrospinal fluid, 738 of 2,783 detected proteins were unique to patients with CFS [23]. Because so many of the proteins created in the body are microbial, these changes are a direct reflection of alterations to the human interactome.

18. Giongo A, Gano KA, Crabb DB, Mukherjee N, Novelo LL, Casella G, et al. Toward defining the autoimmune microbiome for type 1 diabetes. Isme J. 2010.

19. Larsen N, Vogensen FK, van den Berg FW, Nielsen DS, Andreasen AS, Pedersen BK, et al. Gut microbiota in human adults with type 2 diabetes differs from non-diabetic adults. PLoS One. 2010; 5:e9085.

20. Morgan XC, Tickle TL, Sokol H, Gevers D, Devaney KL, Ward DV, et al. Dysfunction of the intestinal microbiome in inflammatory bowel disease and treatment. Genome Biol. 2012; 13:R79.

21. Gao Z, Tseng CH, Strober BE, Pei Z, Blaser MJ. Substantial alterations of the cutaneous bacterial biota in psoriatic lesions. PLoS One. 2008; 3:e2719.

And now for the correct answer...

Microbiome in autoimmune diseases

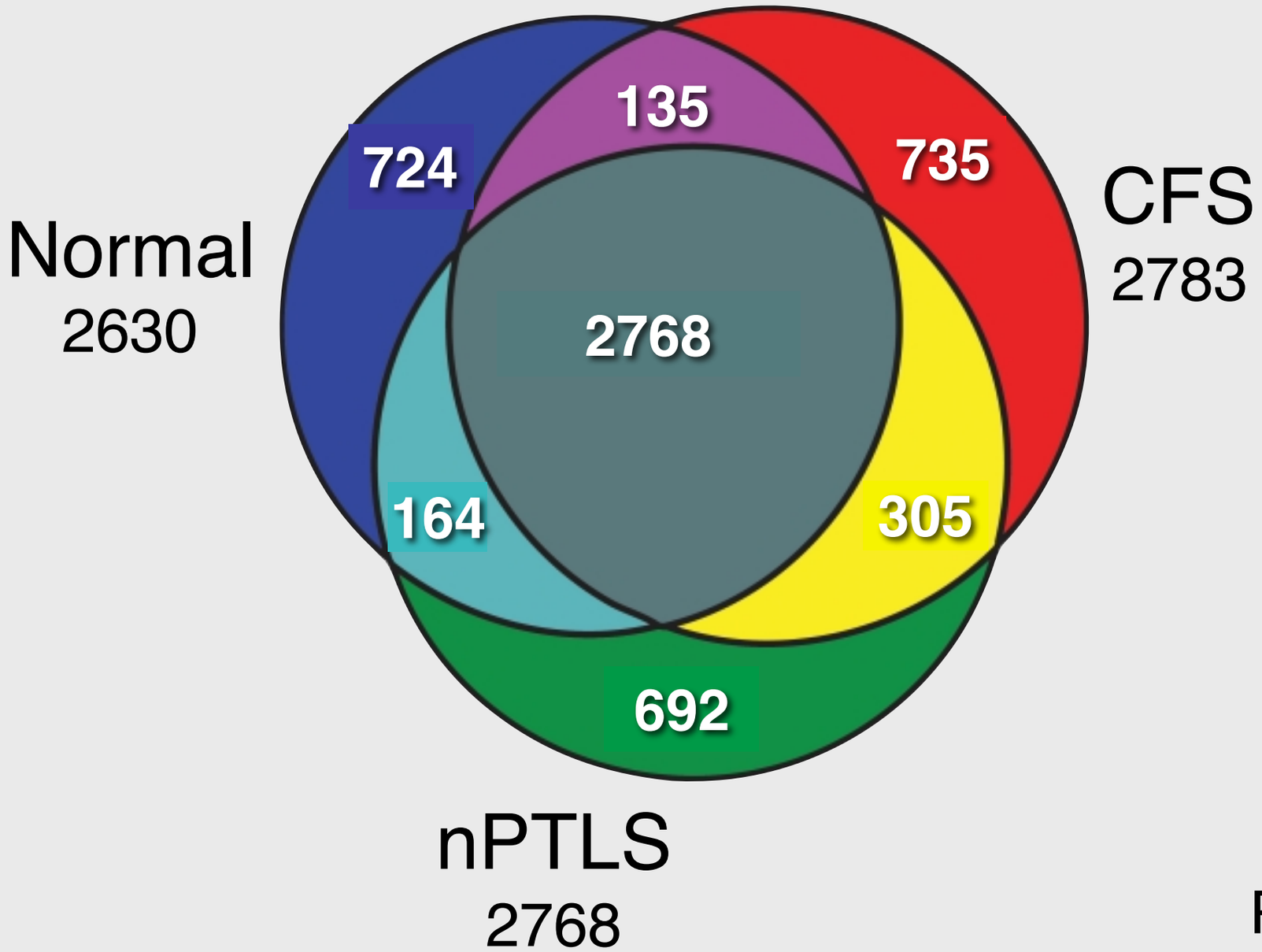
- diabetes, types I and II
- Crohn’s disease
- ulcerative colitis
- psoriasis

Proteome in CFS

Schutzer found that while healthy subjects, and patients with chronic fatigue syndrome harbored many of the same proteins in the cerebrospinal fluid, 738 of 2,783 detected proteins were unique to patients with CFS.

PMID: 21383843

Microbiome in autoimmune diseases



PMID: 21383843

Follow up

Resources for follow up

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Checklist	`goo.gl/fz7USI`
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