JNI 17es Journées Nationales d'Infectiologie

du mardi 7 au jeudi 9 juin 2016
Lille Grand Palais

Lille
et l'interrégion Nord-Pas-de-Calais-Picardie

Big Data et Intelligence Artificielle

Liem Binh LUONG NGUYEN

Session Jeunes Infectiologues Français

Conflit d'intérêt?

Towards a global agenda on health

François Hollande

Elysee Palace, 75008 Paris, France

scp.courrier@elysee.fr

I am President of the French Republic. I declare no competing interests.

1 UN. Millennium Development Goals and Beyond 2015. Goal 4 reduce child poverty. 2016. http://www.un.org/millenniumgoals/childhealth.shtml (accessed April 27, 2016).

2 WHO. Maternal mortality. 2015. http://www.who.int/mediacentre/factsheets/fs348 (accessed April 27, 2016).

3 WHO. Global status report on noncommunicable diseases 2014. Geneva: World Health Organization, 2014. http://www.who.int/nmh/publications/ncd-status-report-2014/en/ (accessed April 27, 2016).

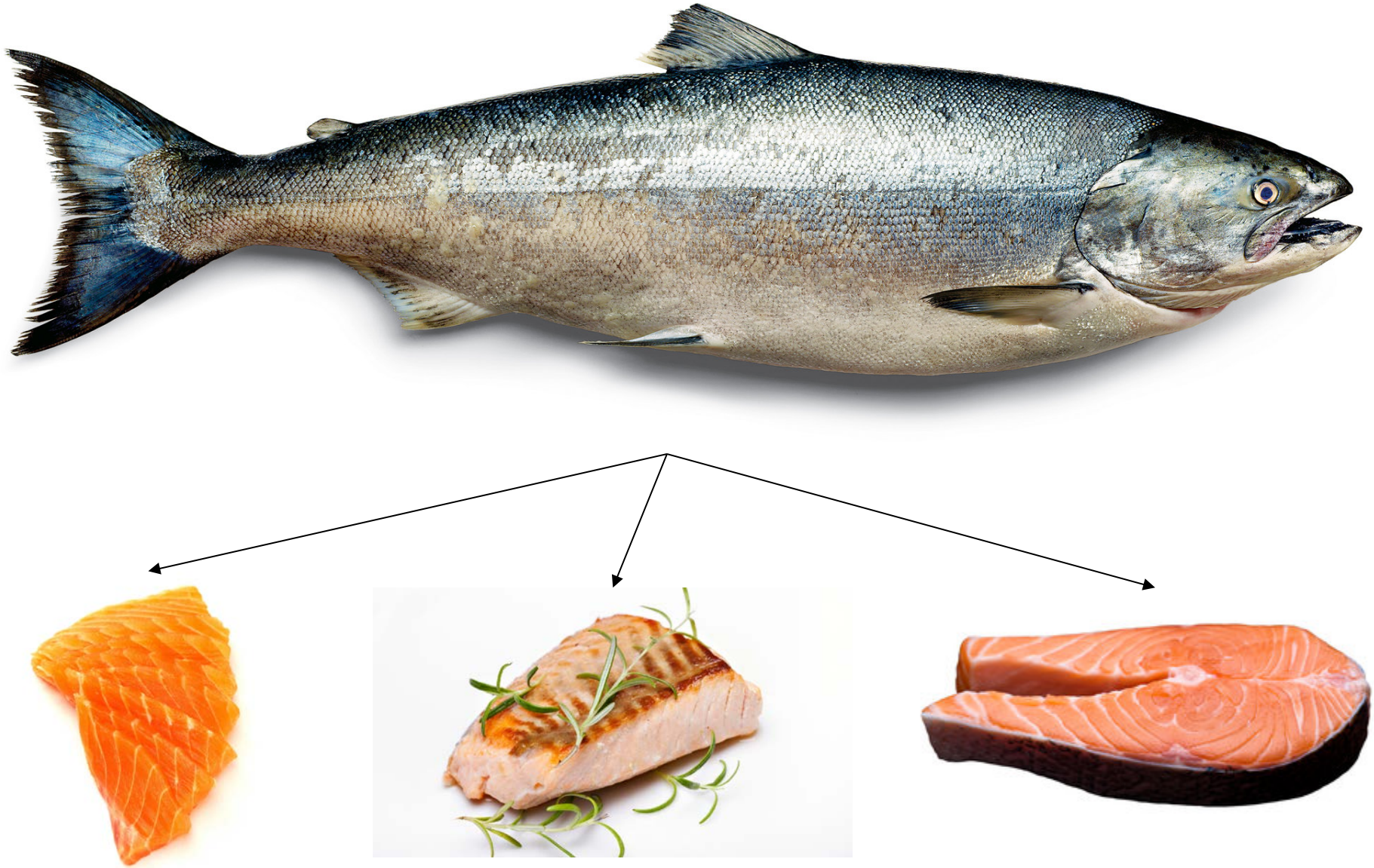
4 UNAIDS. The gap report. 2014. http://www.unaids.org/en/resources/campaigns/2014/2014gapreport/gapreport (accessed April 27, 2016).

1 Improve global mechanisms for surveillance, alert and diagnostics and plans for crisis response

With its new Public Health Agency, France has

La pratique de l’outil statistique

l’outil statistique en pratique



Le Big Data, c’est un très gros poisson,
voire même un banc de poissons

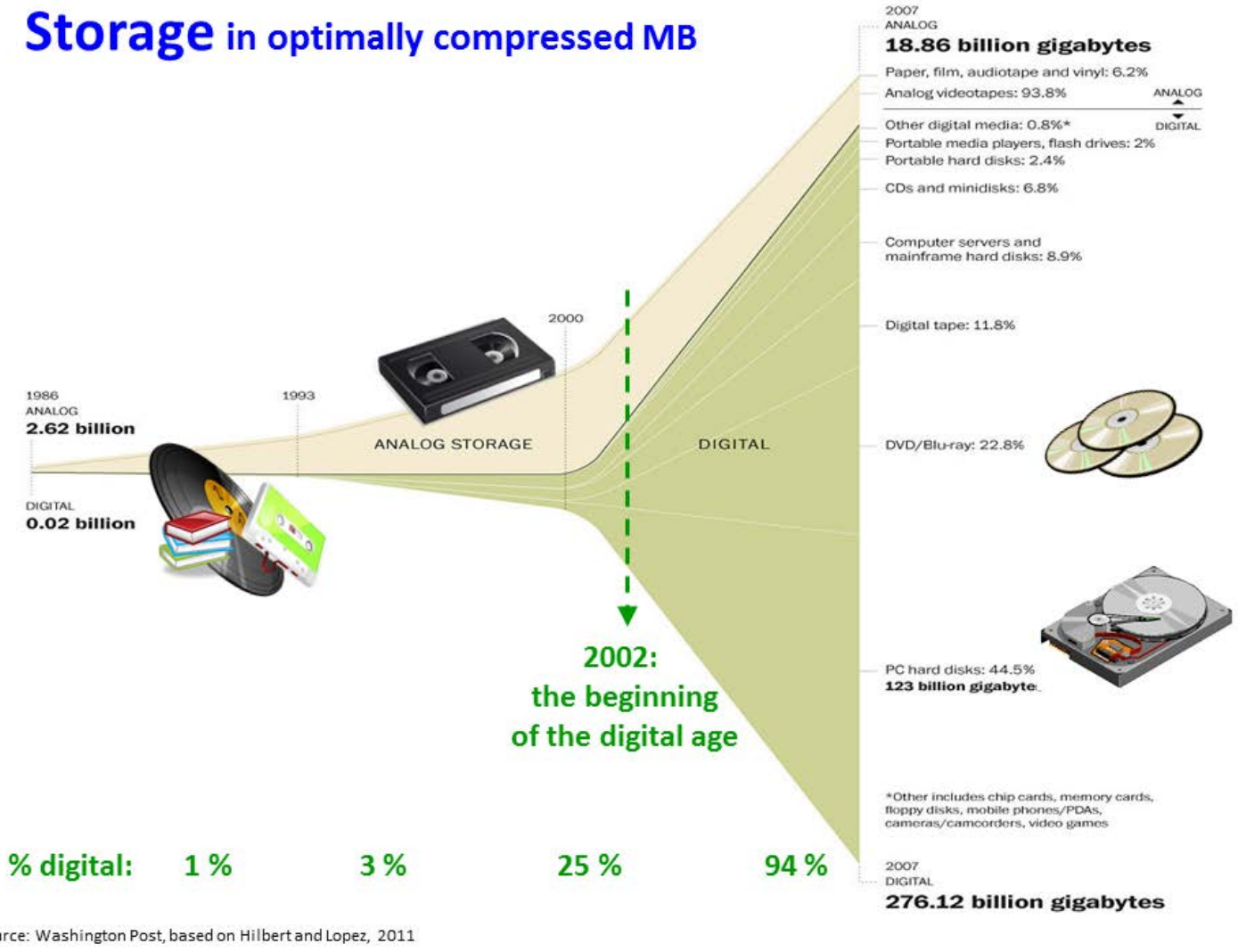
Big Data: 3 Caractéristiques

Volume

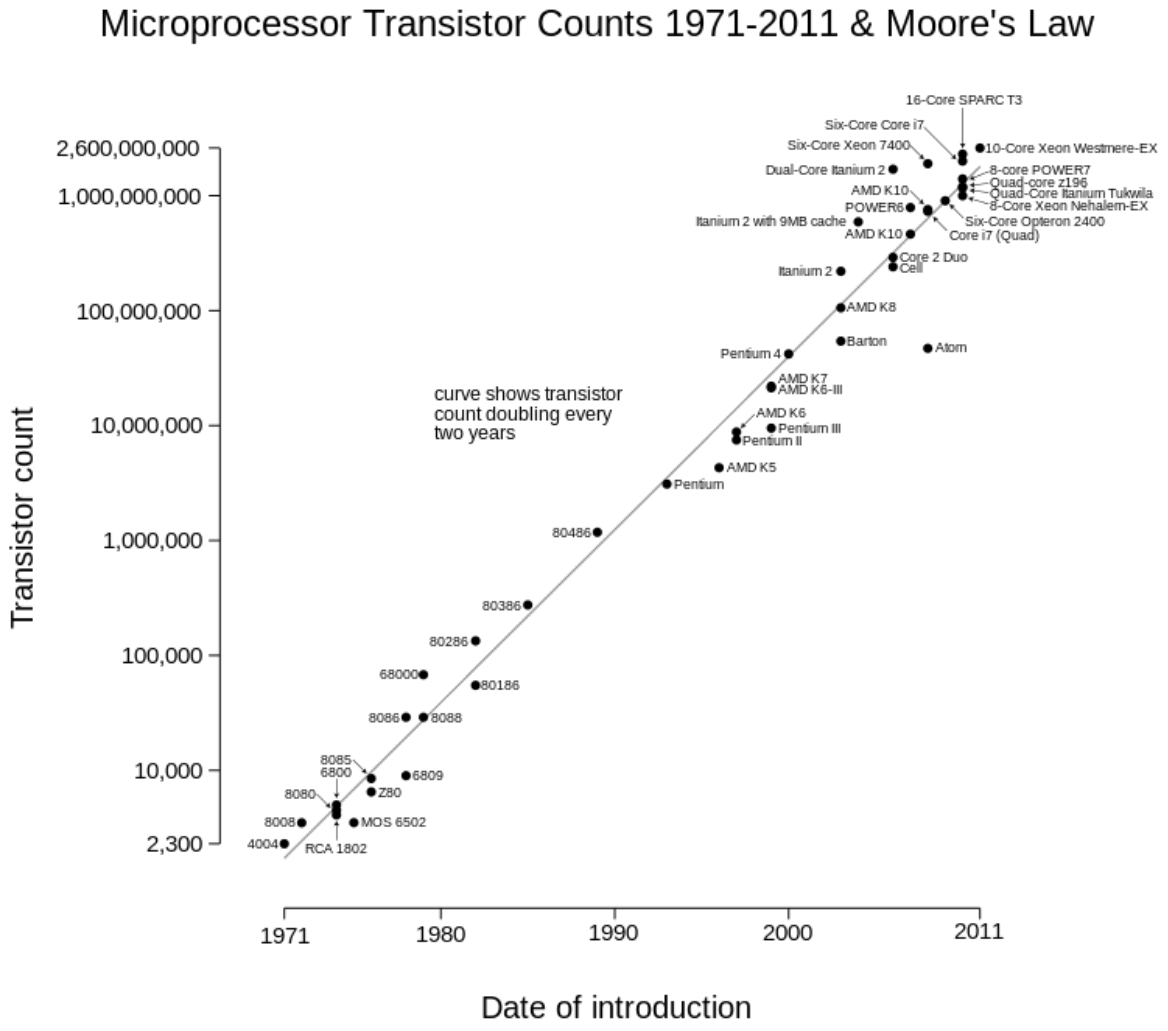
Vitesse

Variété

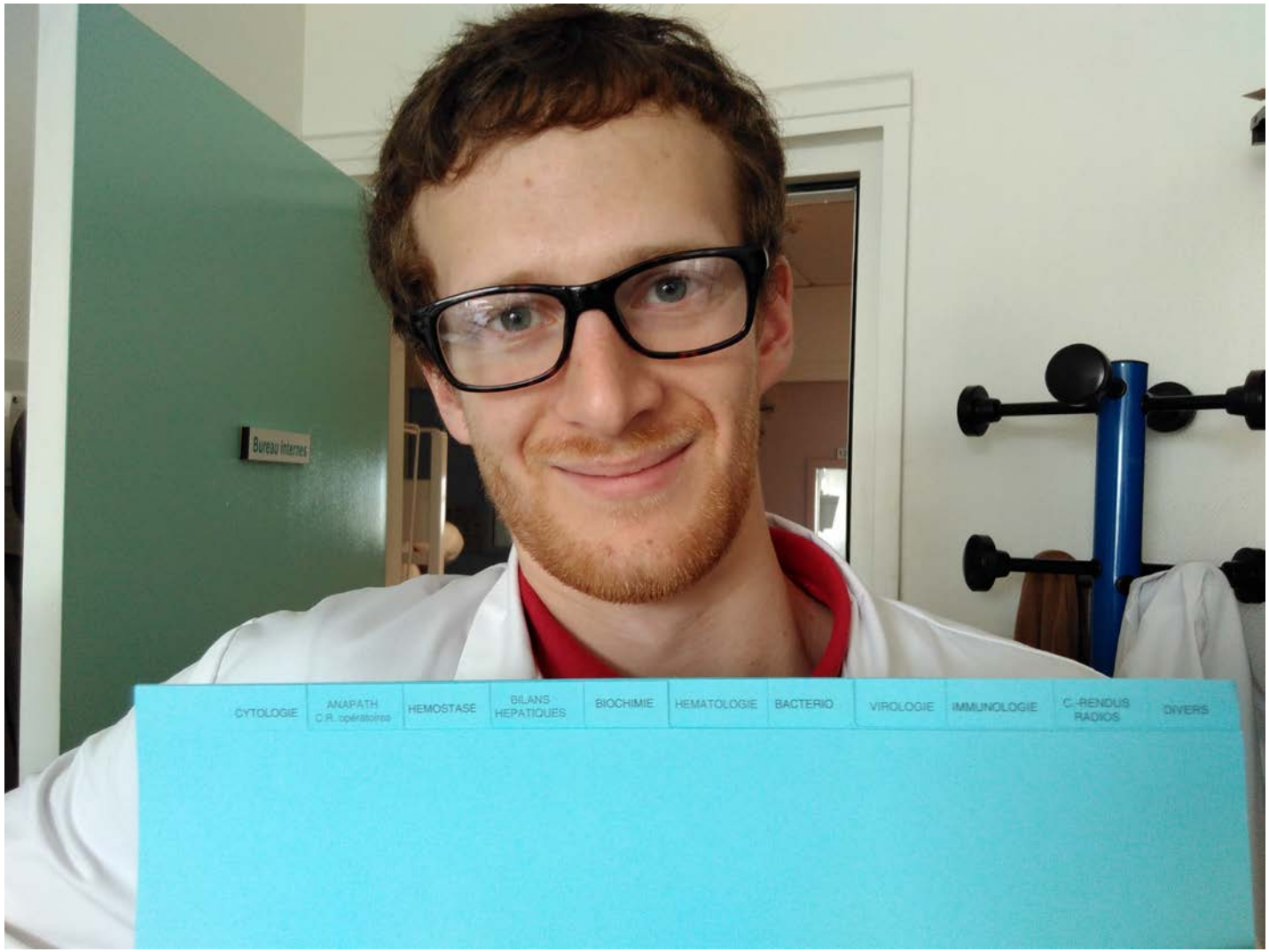
Volume


Storage in optimally compressed MB
2007
ANALOG
18.86 billion gigabytes
Paper, film, audiotape and vinyl: 6.2%
Analog videotapes: 93.8%
ANALOG
DIGITAL
Other digital media: 0.8%*
Portable media players, flash drives: 2%
Portable hard disks: 2.4%
CDs and minidisks: 6.8%
Computer servers and mainframe hard disks: 8.9%
Digital tape: 11.8%
DVD/Blu-ray: 22.8%
PC hard disks: 44.5%
123 billion gigabyte
2000
1986
ANALOG
2.62 billion
1993
ANALOG STORAGE
DIGITAL
DIGITAL
0.02 billion
2002:
the beginning
of the digital age
*Other includes chip cards, memory cards, floppy disks, mobile phones/PDAs, cameras/camcorders, video games
% digital:
1 %
3 %
25 %
94 %
2007
DIGITAL
276.12 billion gigabytes
Source: Washington Post, based on Hilbert and Lopez, 2011

Vitesse: la loi de Moore



Variété


Bureau internes
CYTOLOGIE
ANAPATH
C.R. opératoires
HEMOSTASE
BILANS
HEPATIQUES
BIOCHIMIE
HEMATOLOGIE
BACTERIO
VIROLOGIE
IMMUNOLOGIE
C.-RENDUS
RADIOS
DIVERS

Big Data: quel impact en médecine?

Volume

Vitesse

Variété

Les promesses du séquençage à haut débit

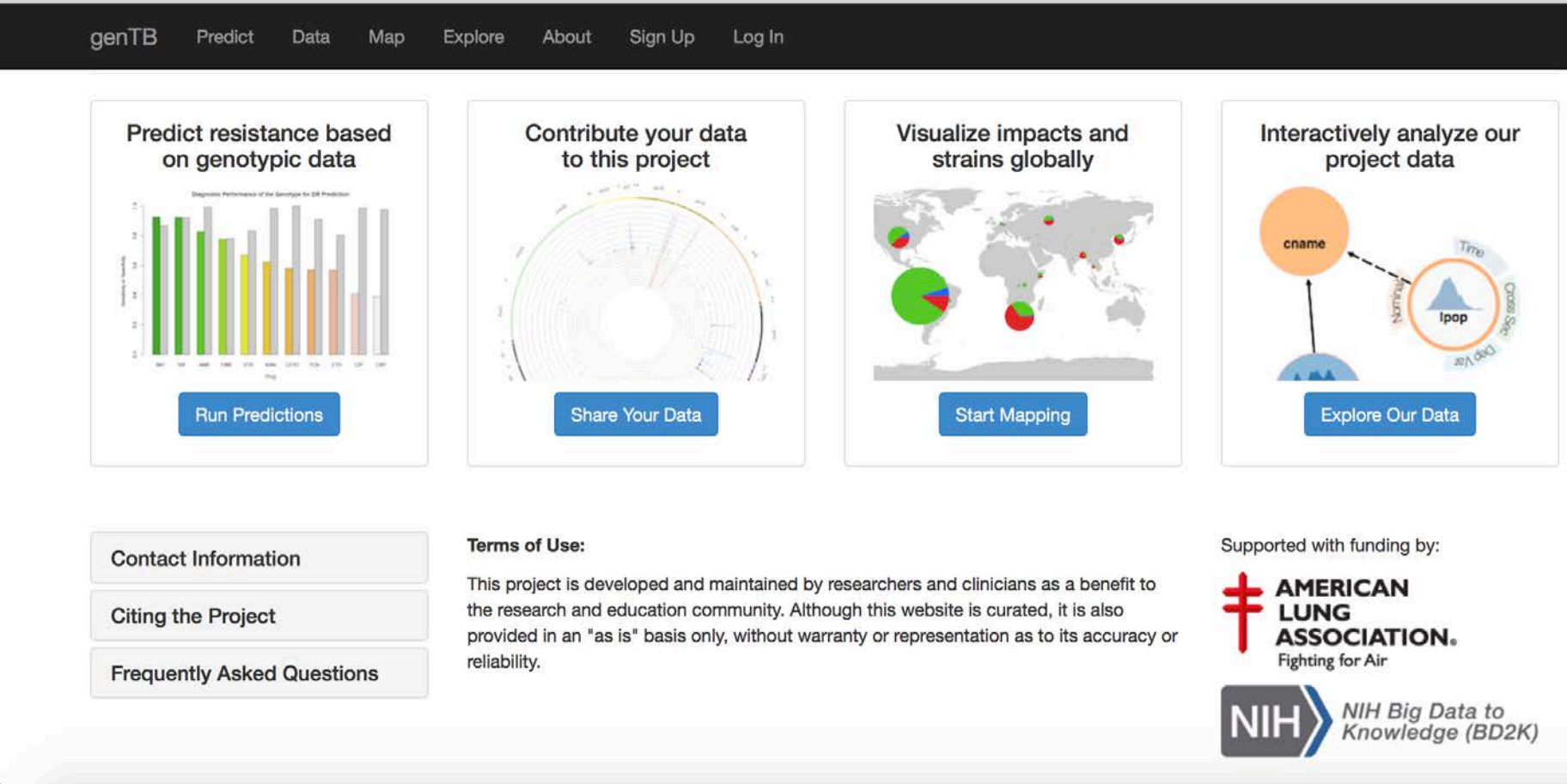
Vol 464|4 March 2010|doi:10.1038/nature08821 nature

ARTICLES

A human gut microbial gene catalogue established by metagenomic sequencing

Junjie Qin[1]*, Ruiqiang Li[1]*, Jeroen Raes[2,3], Manimozhiyan Arumugam[2], Kristoffer Solvsten Burgdorf[4], Chaysavanh Manichanh[5], Trine Nielsen[4], Nicolas Pons[6], Florence Levenez[6], Takuji Yamada[2], Daniel R. Mende[2], Junhua Li[1,7], Junming Xu[1], Shaochuan Li[1], Dongfang Li[1,8], Jianjun Cao[1], Bo Wang[1], Huiqing Liang[1], Huisong Zheng[1], Yinlong Xie[1,7], Julien Tap[6], Patricia Lepage[6], Marcelo Bertalan[9], Jean-Michel Batto[6], Torben Hansen[4], Denis Le Paslier[10], Allan Linneberg[11], H. Bjørn Nielsen[9], Eric Pelletier[10], Pierre Renault[6], Thomas Sicheritz-Ponten[9], Keith Turner[12], Hongmei Zhu[1], Chang Yu[1], Shengting Li[1], Min Jian[1], Yan Zhou[1], Yingrui Li[1], Xiuqing Zhang[1], Songgang Li[1], Nan Qin[1], Huanming Yang[1], Jian Wang[1], Søren Brunak[9], Joel Doré[6], Francisco Guarner[5], Karsten Kristiansen[13], Oluf Pedersen[4,14], Julian Parkhill[12], Jean Weissenbach[10], MetaHIT Consortium†, Peer Bork[2], S. Dusko Ehrlich[6] & Jun Wang[1,13]

Surveillance épidémiologique: GenTB (https://gentb.hms.harvard.edu/)



L’ère des dossiers médicaux informatisés

Evidence-Based Medicine in the EMR Era

Jennifer Frankovich, M.D., Christopher A. Longhurst, M.D., and Scott M. Sutherland, M.D.

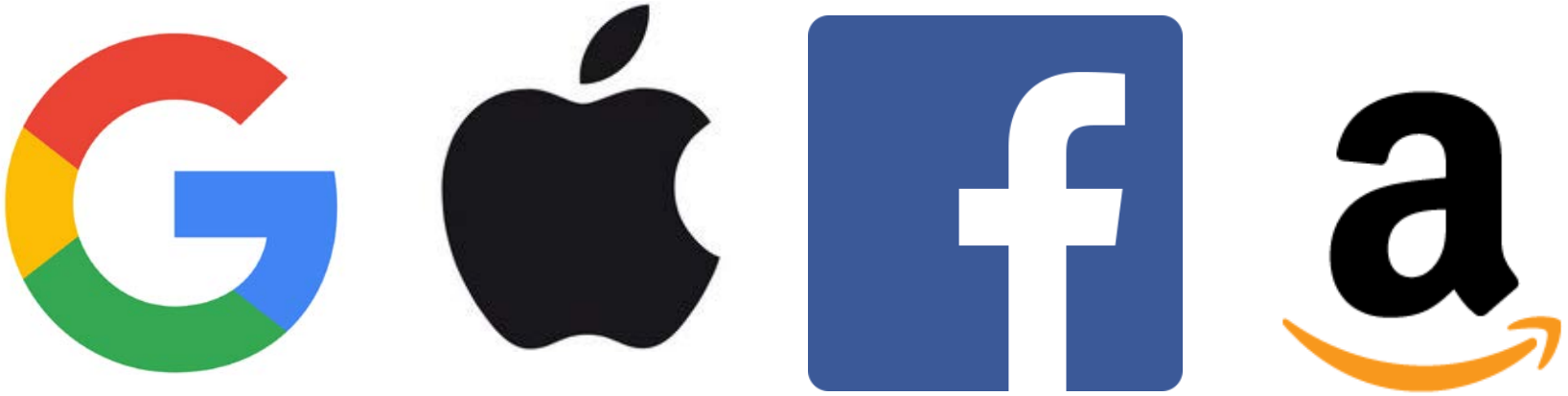
« Modern medical education emphasizes the value of the randomized, controlled trial, and we learn early on not to rely on anecdotal evidence. But the application of such superior evidence, however admirable the ambition, can be constrained by trials’ strict inclusion
and exclusion criteria »

« we turned to a new approach, using the data captured in our institution’s electronic medical record (EMR) and an innovative research data warehouse. The platform, called the Stanford Translational Research Integrated Database Environment (STRIDE), acquires and stores all patient data contained in the EMR at our hospital and provides immediate advanced text searching »

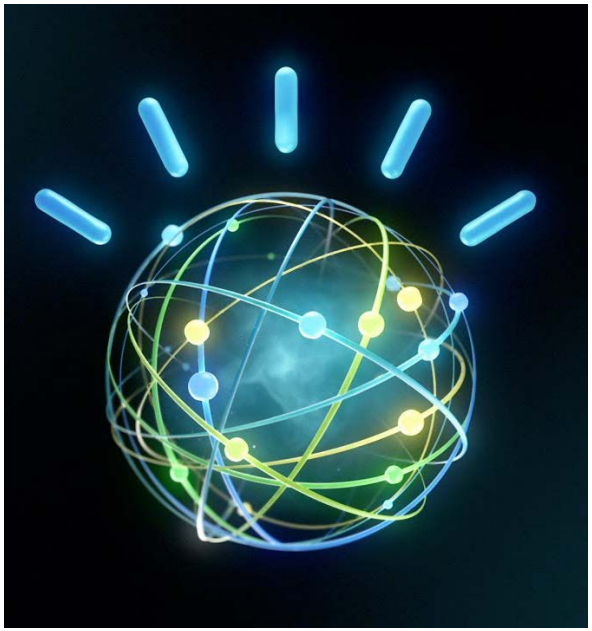
NEJM, 2011

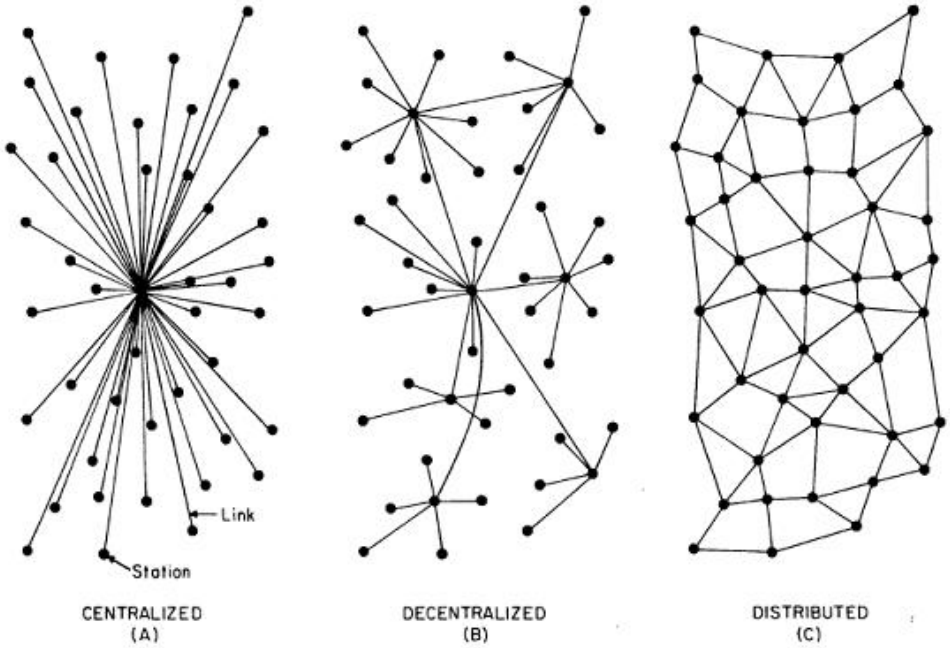
Big Data: Big Money ?

Les entreprises privées, acteurs majeurs du big data



Le futur de la médecine?





Baran, 1963

Comment s'organiser?

Pour une recherche ouverte et collaborative

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIALS

Sharing Clinical Trial Data — A Proposal from the International Committee of Medical Journal Editors

The International Committee of Medical Journal Editors (ICMJE) believes that there is an ethical obligation to responsibly share data generated by interventional clinical trials because partici- their data are used. By changing the require- ments of the manuscripts we will consider for publication in our journals, editors can help foster this endeavor. As editors, our direct influ-

Questionnements éthiques et méthodologiques

Méthodologique

- Biais de recrutement (PMSI)
- Le bruit et le signal

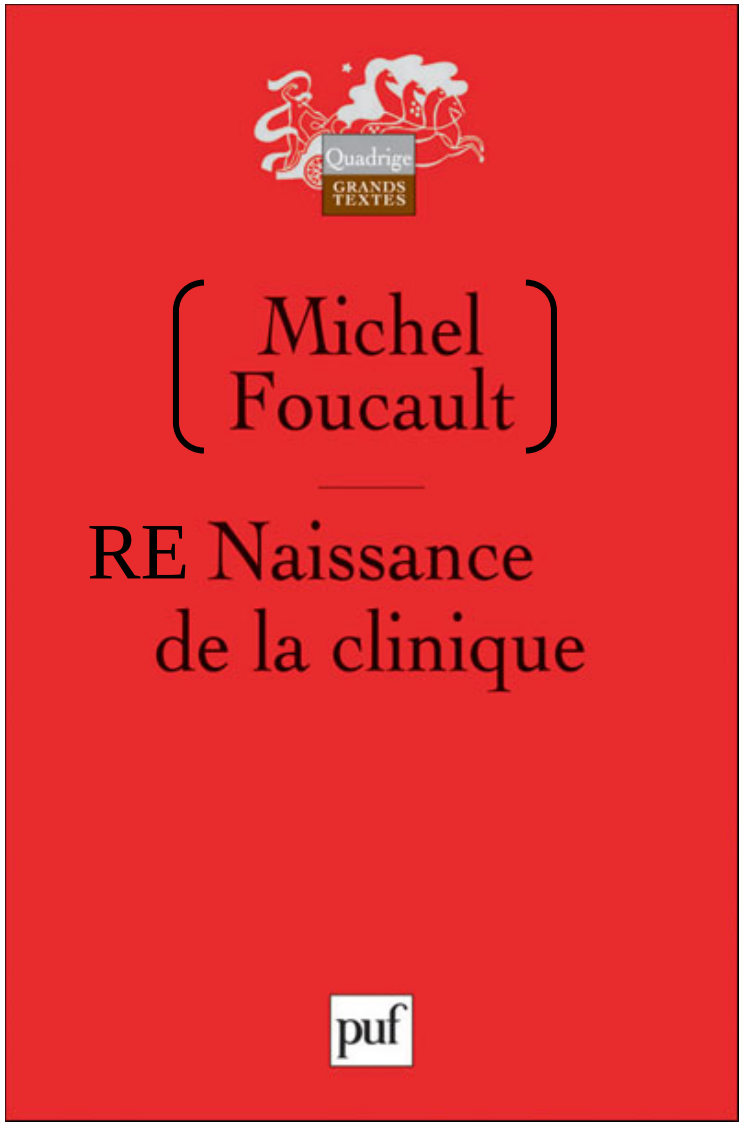
Ethique (Weil Dubuc, 2015)

- La protection de la vie privée
- Nouvelles formes de consentement
- Un outil de surveillance

En conclusion

- Big data et intelligence artificielle: un impact certain sur la pratique médicale
- La clinique ne mourra pas: elle devient plus importante
- Souveraineté sanitaire: production de données, maitrise des outils et nouvelles formes de travail

Merci !


Quadrige
GRANDS TEXTES
Michel Foucault
RE Naissance de la clinique
puf