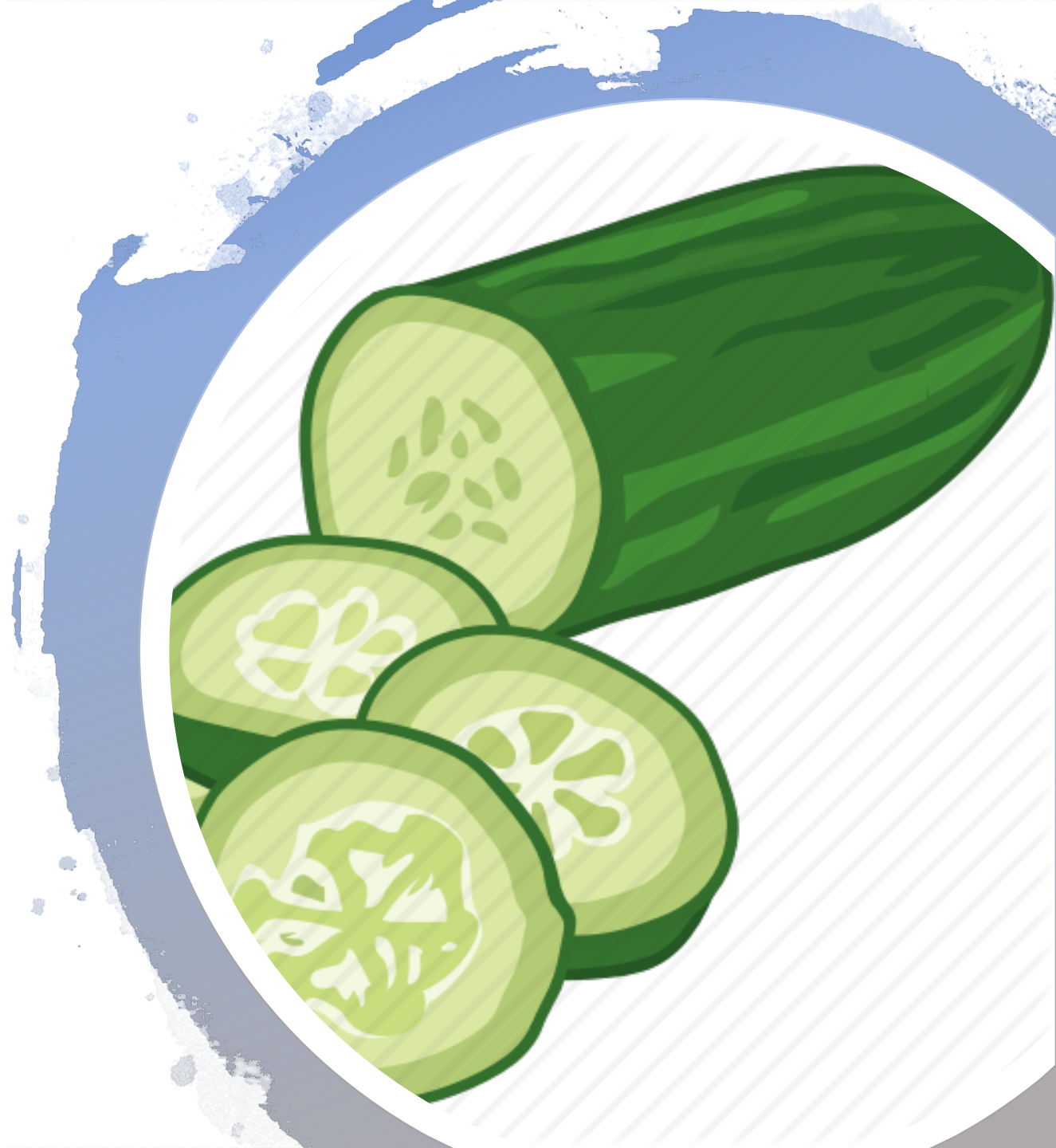


Genome of cucumber

- Presented by **Amal Alotaibi**
- Intro to genomics (485)
- Spring 2020

Outline:

- Genome paper
- Fun facts
- General information about the genome
- Sequencing strategy
- Sequencing method
- Assembly
- Genome outcome
- Questions



Genome papers

OPEN ACCESS Freely available online



The Genome Sequence of the North-European Cucumber (*Cucumis sativus* L.) Unravels Evolutionary Adaptation Mechanisms in Plants

Rafał Wóycicki^{1*}, Justyna Witkowicz¹, Piotr Gawroński¹, Joanna Dąbrowska¹, Alexandre Lomsadze², Magdalena Pawełkowicz¹, Ewa Siedlecka¹, Kohei Yagi¹, Wojciech Płader¹, Anna Seroczyńska¹, Mieczysław Śmiech¹, Wojciech Gutman¹, Katarzyna Niemirowicz-Szczytt¹, Grzegorz Bartoszewski¹, Norikazu Tagashira³, Yoshikazu Hoshi⁴, Mark Borodovsky², Stanisław Karpiński^{1*}, Stefan Malepszy¹, Zbigniew Przybecki^{1*}

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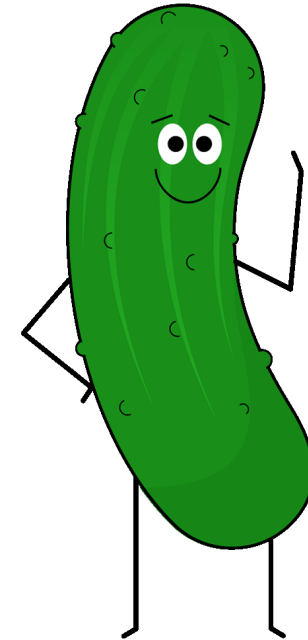
The genome of the cucumber, *Cucumis sativus* L.

Sanwen Huang^{1,19}, Ruiqiang Li^{2,3,19}, Zhonghua Zhang^{1,19}, Li Li^{2,19}, Xingfang Gu^{1,19}, Wei Fan^{2,19}, William J Lucas^{4,19}, Xiaowu Wang¹, Bingyan Xie¹, Peixiang Ni², Yuanyuan Ren², Hongmei Zhu², Jun Li², Kui Lin⁵, Weiwei Jin⁶, Zhangjun Fei⁷, Guangcun Li⁸, Jack Staub⁹, Andrzej Kilian¹⁰, Edwin A G van der Vossen¹¹, Yang Wu⁵, Jie Guo⁵, Jun He¹, Zhiqi Jia¹, Yi Ren¹, Geng Tian², Yao Lu², Jue Ruan^{2,12}, Wubin Qian², Mingwei Wang², Quanfei Huang², Bo Li², Zhaoling Xuan², Jianjun Cao², Asan², Zhigang Wu², Juanbin Zhang², Qingle Cai², Yinqi Bai², Bowen Zhao¹³, Yonghua Han⁶, Ying Li¹, Xuefeng Li¹, Shenhao Wang¹, Qiuxiang Shi¹, Shiqiang Liu¹, Won Kyong Cho¹⁴, Jae-Yean Kim¹⁴, Yong Xu¹⁵, Katarzyna Heller-Uszynska¹⁰, Han Miao¹, Zhouchao Cheng¹, Shengping Zhang¹, Jian Wu¹, Yuhong Yang¹, Houxiang Kang¹, Man Li¹, Huiqing Liang², Xiaoli Ren², Zhongbin Shi², Ming Wen², Min Jian², Hailong Yang², Guojie Zhang^{2,12}, Zhentao Yang², Rui Chen², Shifang Liu², Jianwen Li², Lijia Ma^{2,12}, Hui Liu², Yan Zhou², Jing Zhao², Xiaodong Fang², Guoqing Li², Lin Fang², Yingrui Li^{2,12}, Dongyuan Liu², Hongkun Zheng^{2,3}, Yong Zhang², Nan Qin², Zhuo Li², Guohua Yang², Shuang Yang², Lars Bolund^{2,16}, Karsten Kristiansen¹⁷, Hancheng Zheng^{2,18}, Shaochuan Li^{2,18}, Xiuqing Zhang², Huanming Yang², Jian Wang², Rifei Sun¹, Baoxi Zhang¹, Shuzhi Jiang¹, Jun Wang^{2,17}, Yongchen Du¹ & Songgang Li²

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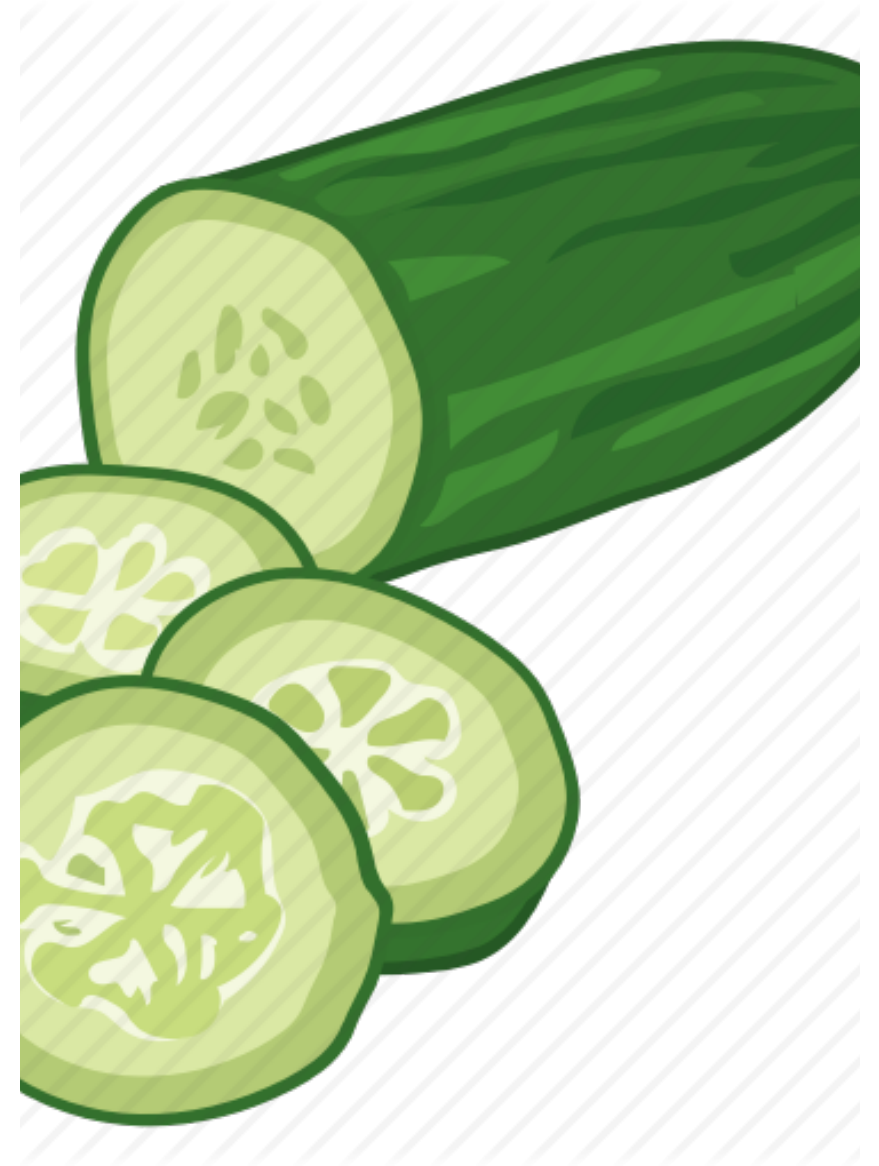
Fun facts:

- cats seem petrified of cucumbers.
- Worldwide cucumber production was 57.5 million tons in 2010 alone, with 40.7 million tons of the production and export happening in China.
- There can be a 20° difference between the inside of a cucumber and the actual temperature outside, this is thought to be where the phrase “cool as a cucumber”

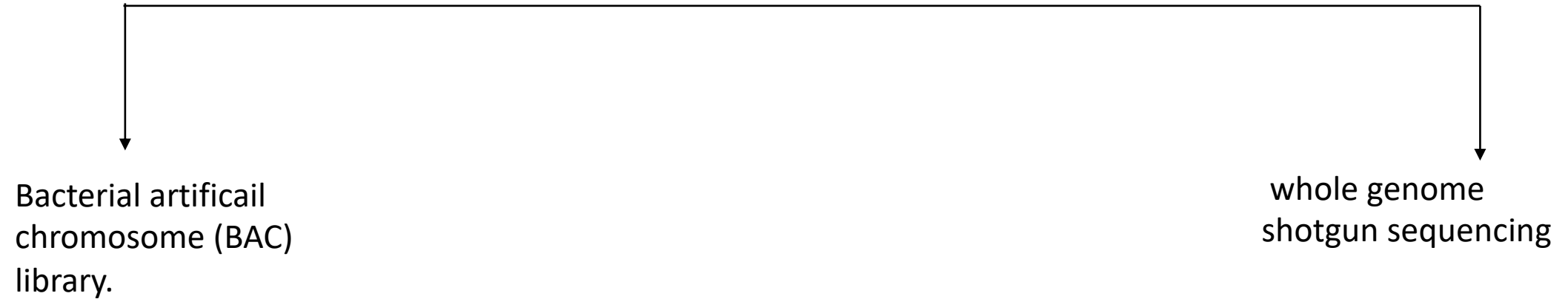


General information about this genome

- The cultivated cucumber an important species for the global food market.
- The scientific name of: *Cucumis sativus*.
- Cucumber is an economically important crop as well as a model system for sex determination studies and plant vascular biology.
- Cucumber have seven chromosomes.



Sequence strategy:

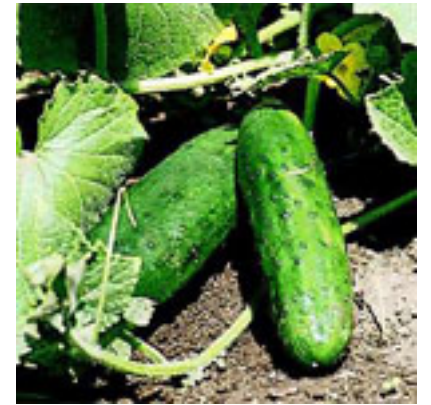


Sequence methods:

- 1) Illumina GA and Sanger plus illumina reads were used.
- 2) Sequence reads after pyrosequencing.



Assembly:

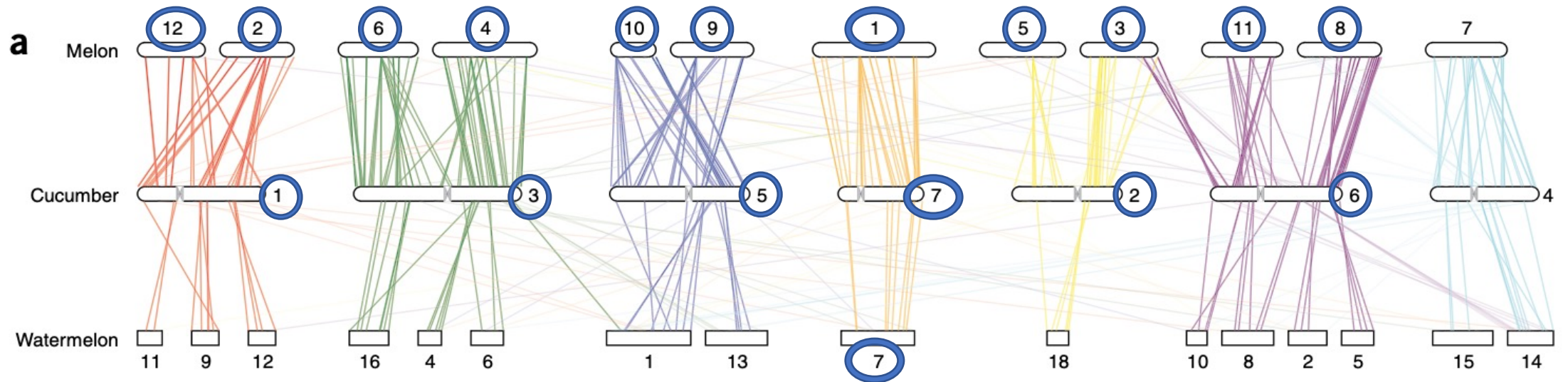


	Assembly method	Genome size	Covarge	N50 contig	N50 scaffold	GC%
Cucumber (chinese inbred line 9930)	De novo	234.5 MB	72.2 X	19.8 kb	1,140 kb	_____
Cucumber (Line B10)	SOAPdenovo	_____	11.97 X	27,086 bp = 27.086 kb	2,324,038bp =2324.03 kb	36.6%

Line B10 = North-Europen Borszczagwoski.

Genome outcome:

	Cucumber	Melon	Watermelon
Chromosome	7	12	11
Corresponds/match	7	1	7
Colinear	1,2,3,5, and 6	2 and 12, 3 and 5, 4 and 6, 9 and 10, 8 and 11	—



Questions:

- Q1) What is the scientific name of cucumber?
 - *Cucumis sativus*
- Q2) List the strategies ?
 - Bac library and whole genome shotgun sequencing.
- Q3) How many chromosomes in cucumber?
 - 7 chromosomes.

