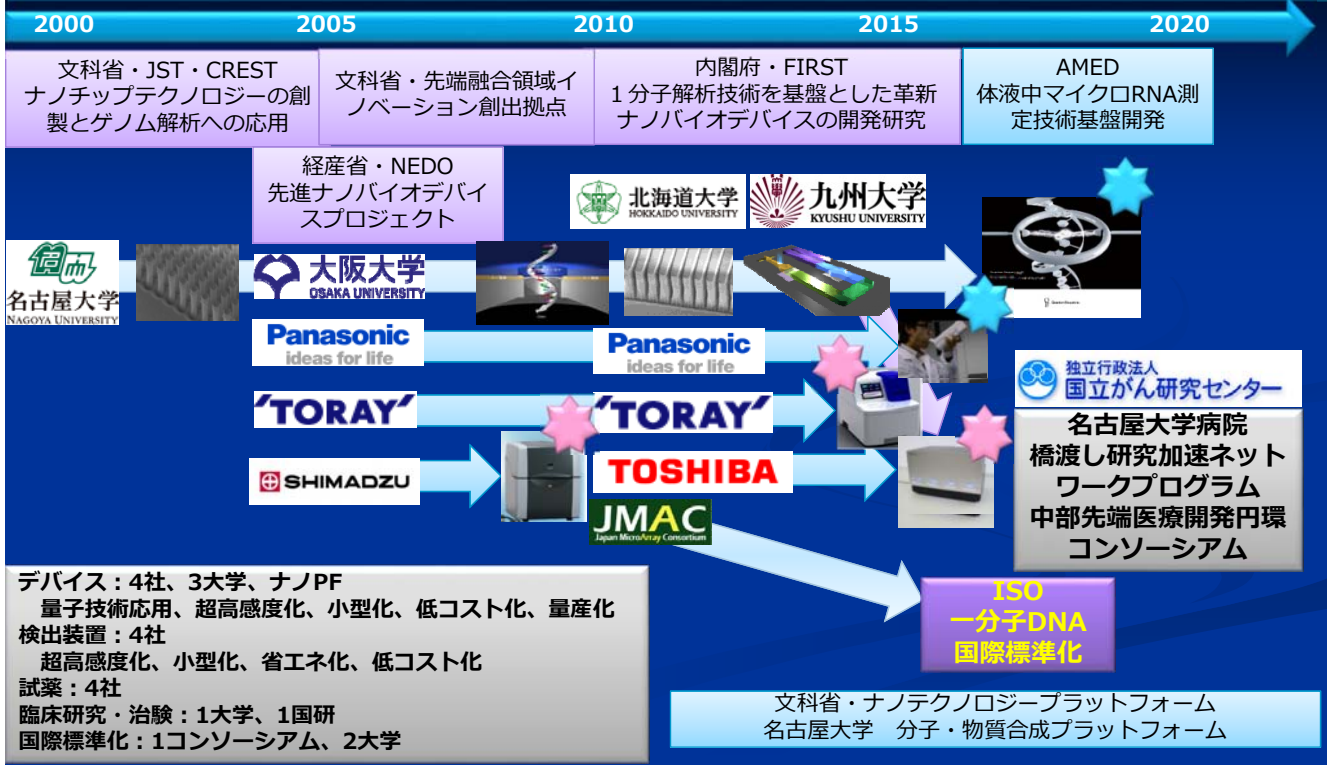


ナノポア・ナノピラーデバイスによる次世代DNAシーケンサ



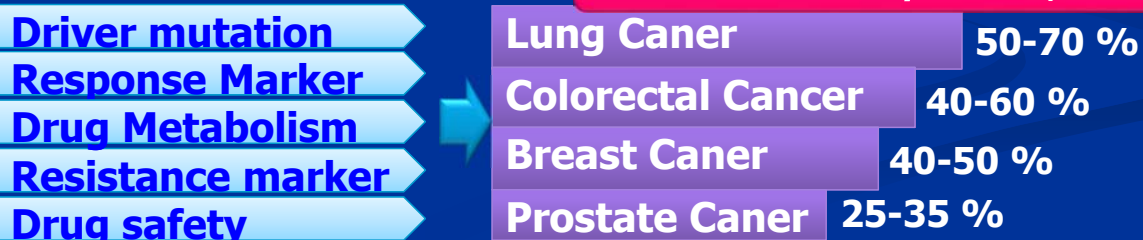
Personalized Medicine McKinsey Global Institute, May 2013

Potential for additional personalized therapeutics

	Mutated Genes	Driver Mutations	Mutations targeted by drugs	Mutations targeted by pipeline drugs
Lung	80	8-10	2	17
Breast	47	5-8	1	15
Colorectal	86	7-10	1	11
Prostate	93	4-7	0	10

Expected % Next Generation DNA Sequencing (whole exome) for initial diagnosis in 2018

Genome: 1h, 100\$ @2025



Ultrafast Analysis/Manipulation of a Single DNA/RNA from a Single Cell for Nanopore Sequencing

Nanopore
Nanoslit Nanowall

100nm Nanowire

20nm Nanowire

3G nanopillar

Separation of Cancer Cell, Exosomes, Bacteria in seconds

DNA/RNA Extraction from a Single Cancer Cell in 500 ms

Elongation of a Single ssDNA/dsDNA Molecule of 10 kbp~2 Mbp in 1 s

Ultrafast Separation of DNA/miRNA in 64 μs

JPN Pat. 2012-236451
PCT/JP2013/078203
JPN Pat. 2013-044739
PCT/JP2014/055867
JPN Pat. 2013-26424
PCT/JP2015/
JPN Pat. 2014-049054
PCT/JP2015/

大阪大学
TOSHIBA
Panasonic
TORAY

Sci. Rep., 2016
Sci. Rep., 2015
Sci. Rep., 2014
Nature Nano., 2010, 2014, 2016
Nano Lett., 2015; ACS Nano, 2013

npg nature publishing group

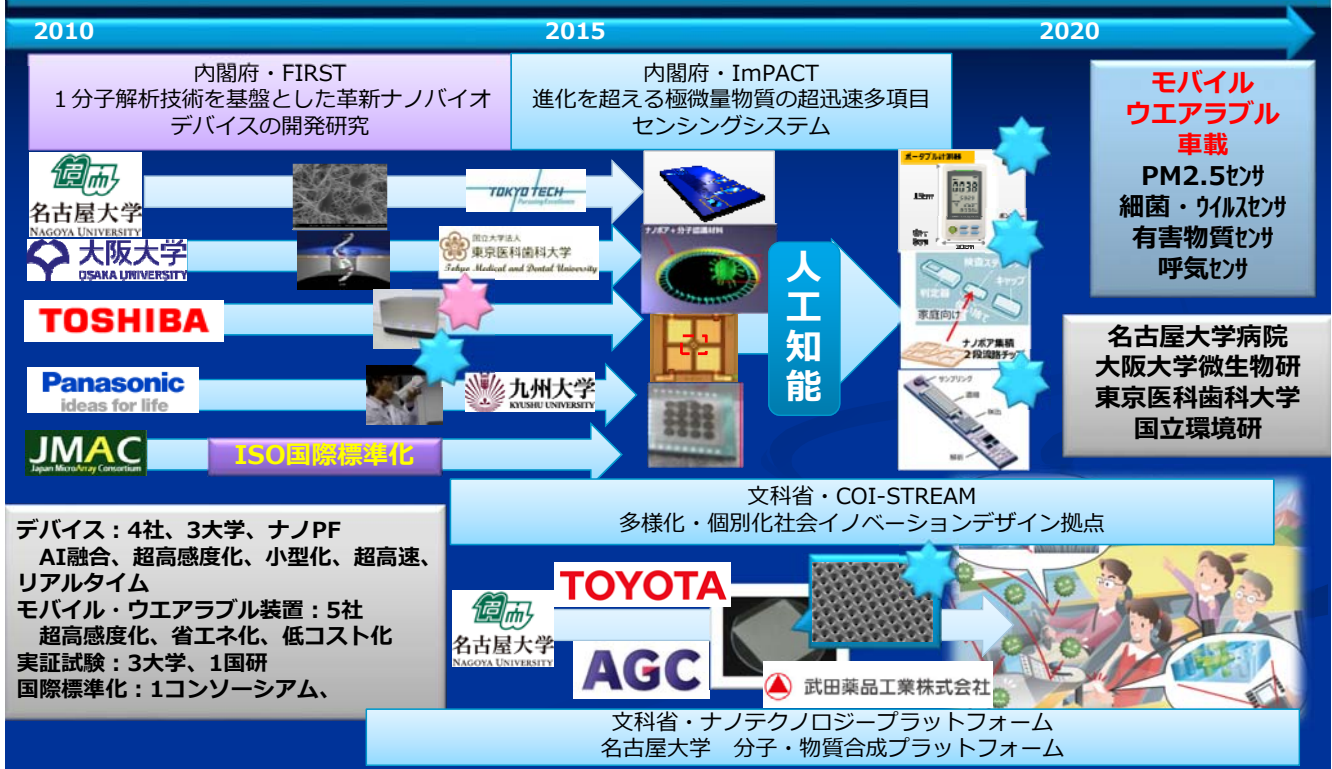
ナノテクノロジーの標準化に関連する組織

ISO, FDA主催の国際会議を通じて、日欧の主要プレイヤーとネットワークを構築し、単なる提案だけでなく、ロビー活動を含めた交渉実績を積み重ねることで、国際標準化活動を推進している。



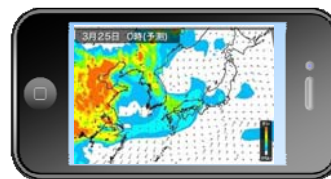
GSRS: Global Summit on Regulatory Science

超スマート社会を構築するAI-powered IoTナノセンサ



Ultra high-speed multiplexed sensing system beyond evolution for the detection of extremely small amounts of substances

Outdoor air pollution was estimated to cause 3.7 million premature deaths worldwide in 2012 (WHO).



Airborne Particulate Matters



Bioaerosols



New Eng. J. Med., 359, e19 (2008).



Personalized Real-time Monitoring and Forecast of Air Pollution For Healthcare

モバイル装置

国内6万台普及 空間分解能 2.5 km
国内1500万台の携帯端末 空間分解能0.2 km

参考：既存技術

PM2.5計測サイト：1000カ所 空間分解能19 km
12万人に1台 375 km² (≒(19 km)²)に1台
名古屋市(326)、東京都(2188)