Press Conference

President of JST

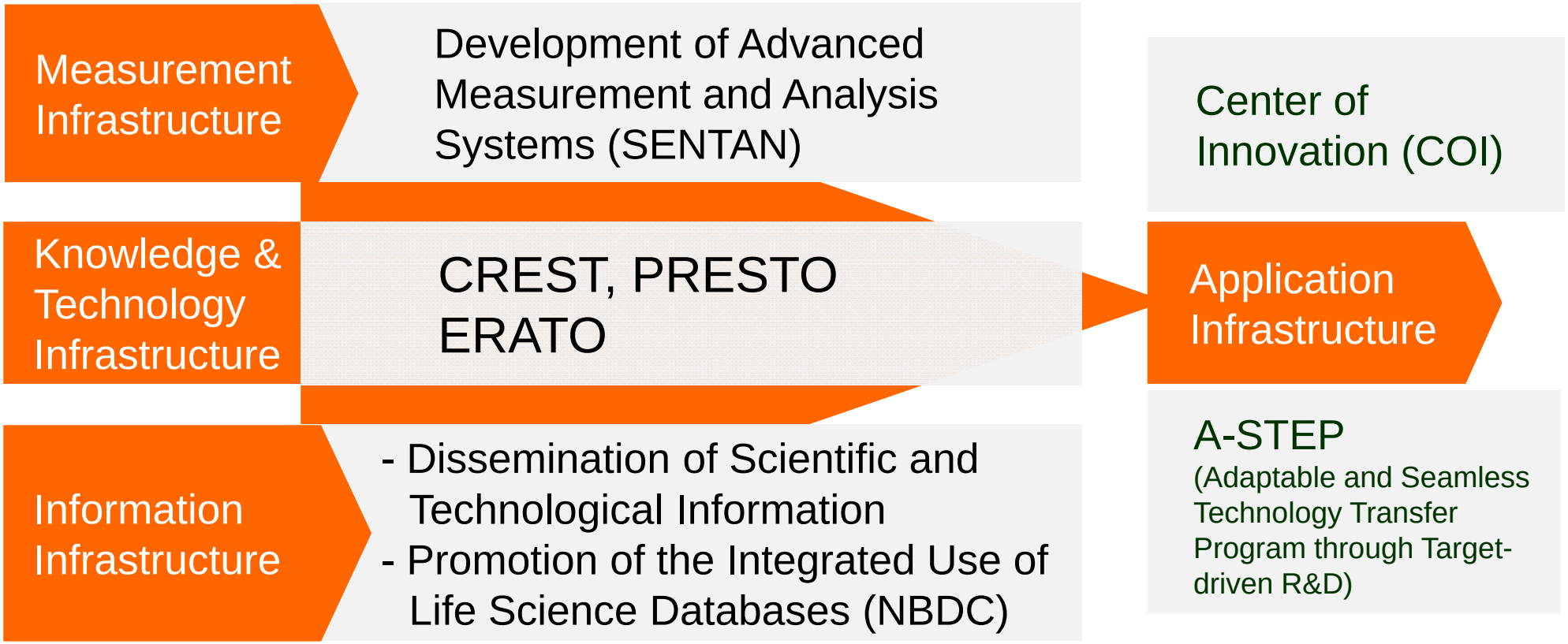
May 16, 2013

Japan Science and Technology Agency

FY 2013 Key Initiatives:
Innovation in Drug Discovery and Diagnosis Technology based on Metabolism Analysis

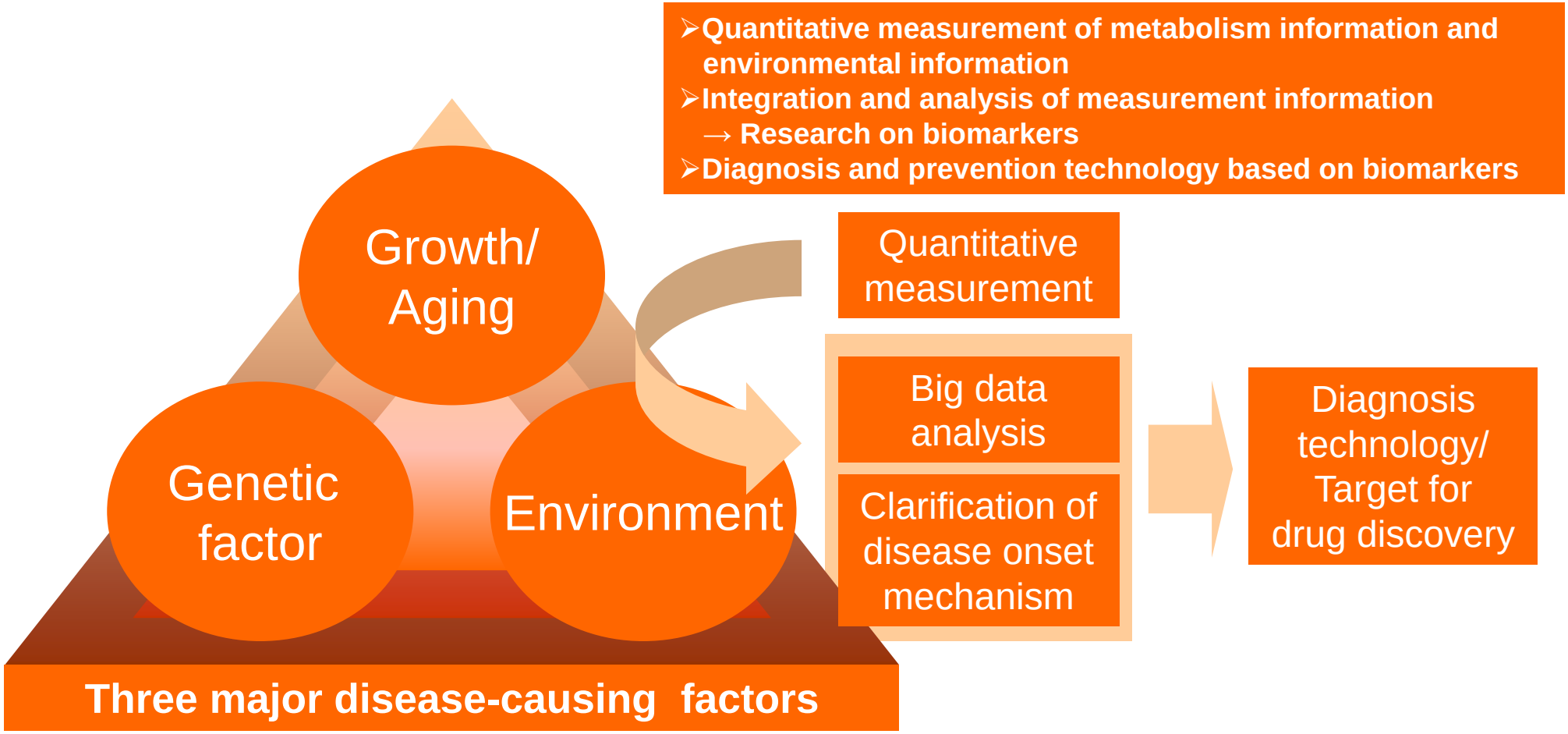
FY 2013 Key Initiatives: Innovation in Drug Discovery and Diagnosis Technology based on Metabolism Analysis

Developing technologies for early intervention in lifestyle-related diseases through utilizing advanced measurement technology and bioscience databases



Current Situations and Issues of Lifestyle-related Diseases

- ✓ High rates of treatment satisfaction and drug contribution thanks to drug development
- ✓ Aggravation of complications; discovery of markers for early intervention and development of preventive drugs are expected
- ✓ Analysis of metabolic disorders and application of epidemiological big data are required



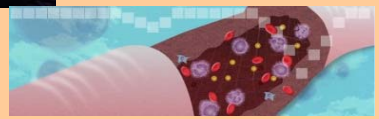
Specific Programs JST is Undertaking

独立行政法人 科学技術振興機構 Japan Science and Technology Agency

Clarification of molecule mechanism of disease onset through metabolism analysis

CREST/PRESTO
"Epigenome" 2009-2017

CREST/PRESTO
"Homeostasis" 2012-2019



CREST/PRESTO
"Inflammation" 2010-2017

Analysis of big data containing metabolism/epidemiology information

- **CREST "Big Data" 2013-2020**
- **National Bioscience Database Center (NBDC) 2011-2013**

Supervisor.
Prof. Tanaka
(CREST)

Supervisor:
Prof. Kitsuregawa
(CREST)

Director:
Prof. Kanaya
(NBDC)
Metabolism DB

Director:
Prof. Matsuda
(NBDC)
Epidemiology DB

Advanced measurement technology as a basis of pathological clarification and diagnosis technology development

- **Development of Advanced Measurement and Analysis Systems (SENTAN)**
  - **"General Area" 2004-present**
  - **"Life Innovation Area" 2013-present**
- **CREST/PRESTO**
  - **"Novel Measuring and Analytical Technology Contributions" 2004-2011**
- **A-STEP**
  - **"Full-scale R&D Stage" 2009-present**

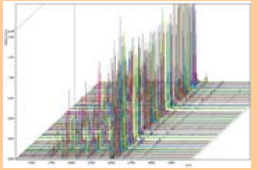
Team Leader: Prof. Setou
(Advanced Measurement)

Development of diagnostic technology and preventive drugs based on biomarkers

CREST/PRESTO "Disease Metabolism" 2013-2020

Supervisor:
Prof. Oda
(PRESTO)

Supervisor:
Prof. Shimizu
(CREST)



Development of biomarkers

Validation of disease control

- Standardization of advanced measurement systems

- Identification of target molecules for drug discovery
- Development of novel diagnosis technology

JST R&D Outcomes and their Current Progress

独立行政法人 科学技術振興機構 Japan Science and Technology Agency

CREST
"Analysis of Abnormal Regulation of Cell Differentiation and Drug Development Research by using Induced Cancer Stem Cells" (Director: Prof. Hideyuki Saya, Keio Univ.) 2008-2013
ERATO
"SUEMATSU Gas Biology" (Director: Prof. Makoto Suematsu, Keio Univ.) 2009-2014

Validation of the cancer therapy targeting CD44v

A-STEP: Promoting R&D Type
"Development of antibody drugs for triple-negative breast cancer" (Shinichiro Niwa, Link Genomics, Inc. / Prof. Hideyuki Saya, Keio Univ.) 2009-present

Development of Advanced Measurement and Analysis Systems (SENTAN)
"Development and optimization of mass microscope"
Team Leader:
2004-2008: Prof. Mitsutoshi Setou
(Hamamatsu Univ. School of Medicine)
2009-2011: Mr. Kiyoshi Ogawa (Shimazu Corporation)
-**Combining an optical microscope with a mass spectrometer**
-**Visualizing directly the distribution of specific molecules**

Product Name: Imaging Mass Spectrometry, **iMScope** (Released in 2013 by Shimazu Corporation)

Development of Advanced Measurement and Analysis Systems (SENTAN)
"High-speed three-dimensional imaging by fourier domain optical coherence tomography" 2004-2007
(Team Leader: Prof. Toyohiko Yatagai, Utsunomiya Univ.)


Early model
(3D OCT-1000)


Latest model
(3D OCT-1 Maestro)

Product Name: Optical Coherence Tomography 3D OCT (**for the diagnosis of macular edema caused by diabetes** etc.)
Released in 2006 by Topcon Corporation

A-STEP: Contract Development
"Manufacturing technology of functional sweetener arabinose" 2000-2003
Inventor: Prof. Susumu Hizukuri (Kagoshima Univ.)
Contracted company: Sanwa Starch Co., Ltd.

Development of large-scale production technology of high-concentrate arabinose

Applications
Sweetener in low-calorie foods
for the dietary therapy of diabetes
and its prevention

Early Intervention Technology for Lifestyle-related Diseases
—JST Achievements and Visions/Scenario for the Future—