

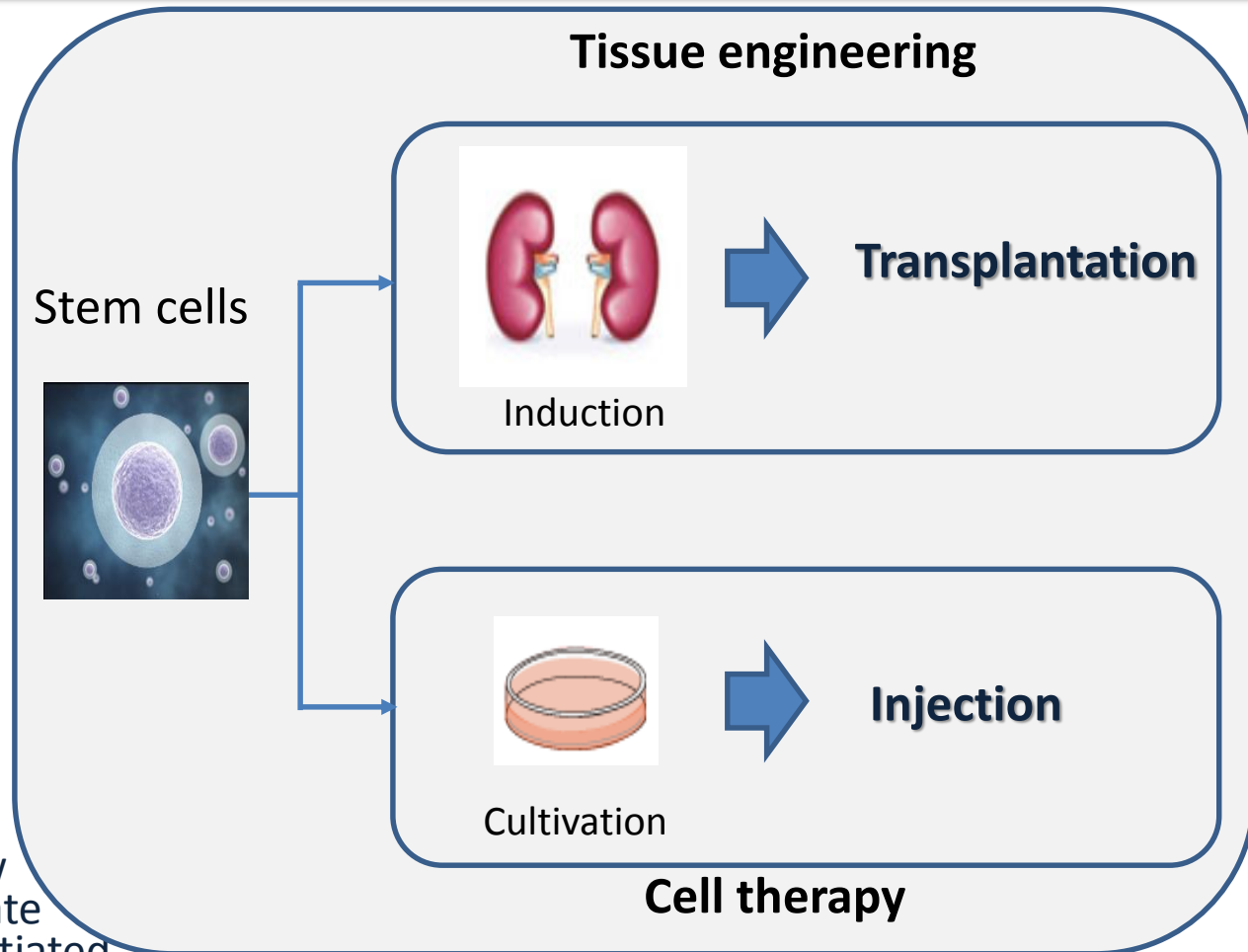


Challenge in the field of regenerative medicine

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Regenerative medicine

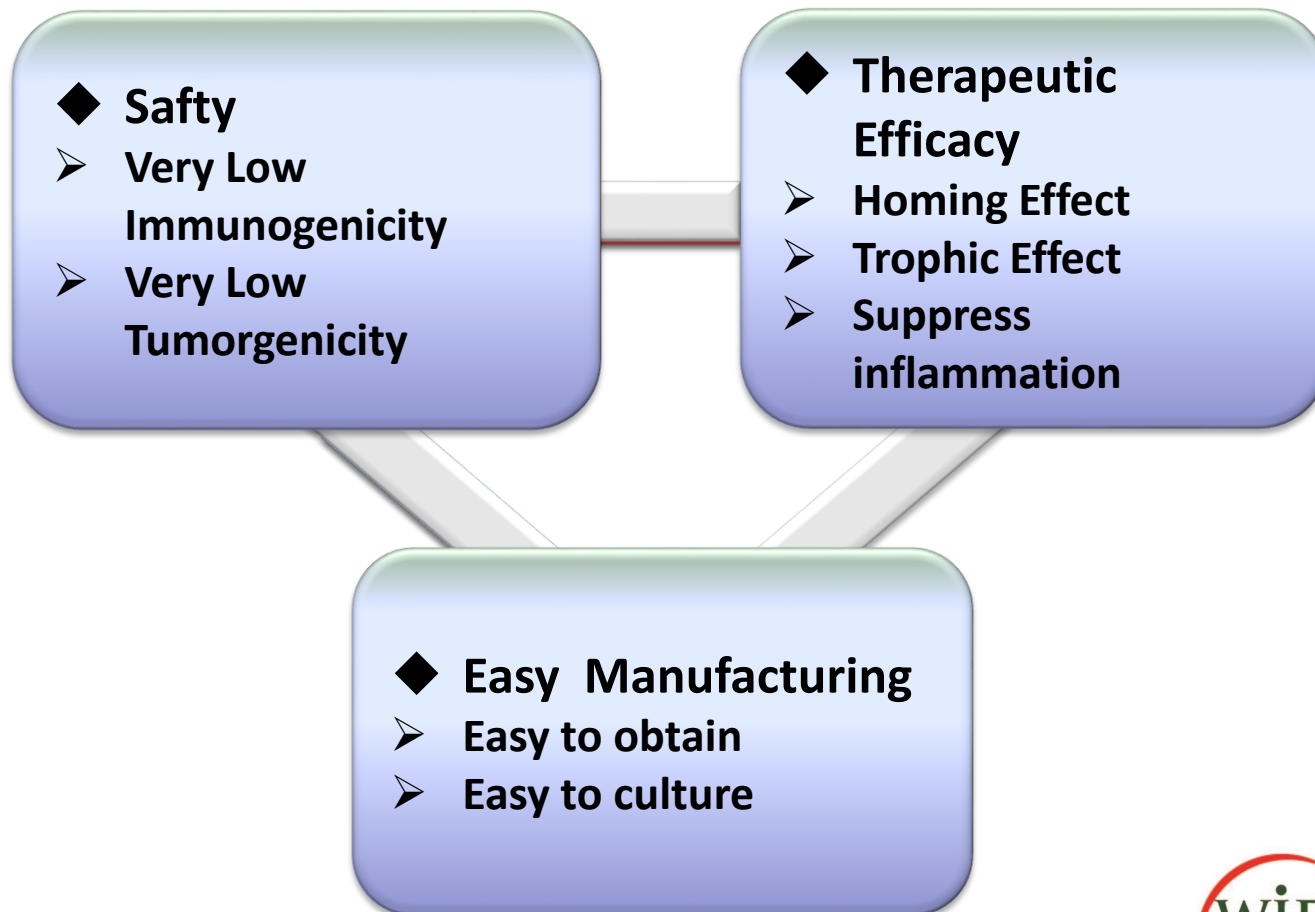


Stem Cells :

- ✓ Can self-renew
- ✓ Can differentiate
- ✓ Are undifferentiated

Why MSCs?

3 excellent features !!



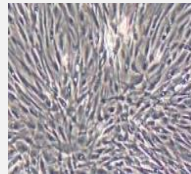
Stem cells are attracting the most attention now

©Our strategy

- ✓ Serum free
- ✓ Animal Origin Free
- ✓ High purity stem

ADSC

【Advantage】



- Easily obtainable from adipose
- Low risk of rejection
- Low risk of tumorigenicity
- Free from genetic engineering

Cell therapy

【Character】



- Immunosuppressive
- Homing effect
- Easy to cultivate
- Injectable

Rohto focuses on the ADSCs (Adipose-derived stem cells)

Target Diseases of Cell Therapy

Liver

Liver cirrhosis
Pulmonary fibrosis



Skin

Skin wound
Hair loss



Immunology

Autoimmune disorder
Crohn's disease
GvHD



Diabetes and its complications



Malignancy

Blood cancer
Bladder cancer
Prostate cancer
Ovarian cancer

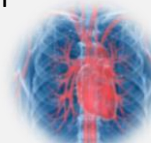


Neurology

Parkinson's disease
Spinal cord injury
Amyotrophic lateral sclerosis

Cardiovascular

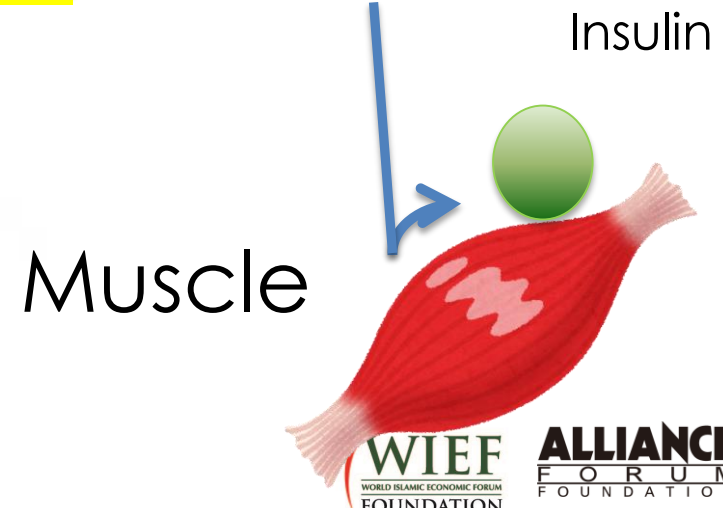
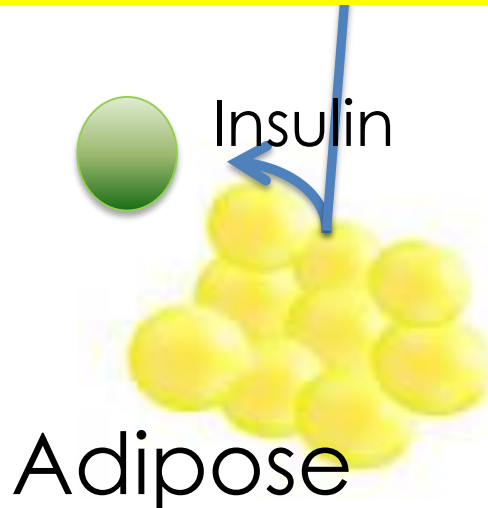
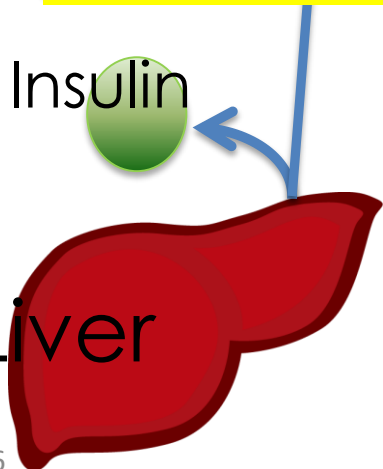
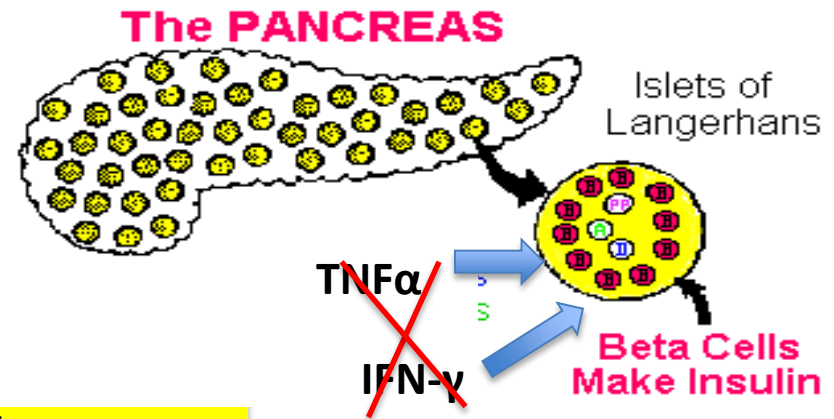
Heart failure
Buerger disease
Blood cancer



MSC Teherapy in Diabetes

Suppress pro inflammatory cytokines and prevent β -cell apoptosis

Reduce Insulin resistance factors in key organs IRS-1, AKT/PKB, GLUT4...and improve insulin sensitivity



Diabetes: facts and figures

- The number of people with type 2 **diabetes is increasing** in every country
- **77%** of people with diabetes live in **low- and middle-income countries**
- The **greatest number** of people with diabetes are between **40 and 59** years of age
- **179 million** people with diabetes are **undiagnosed**

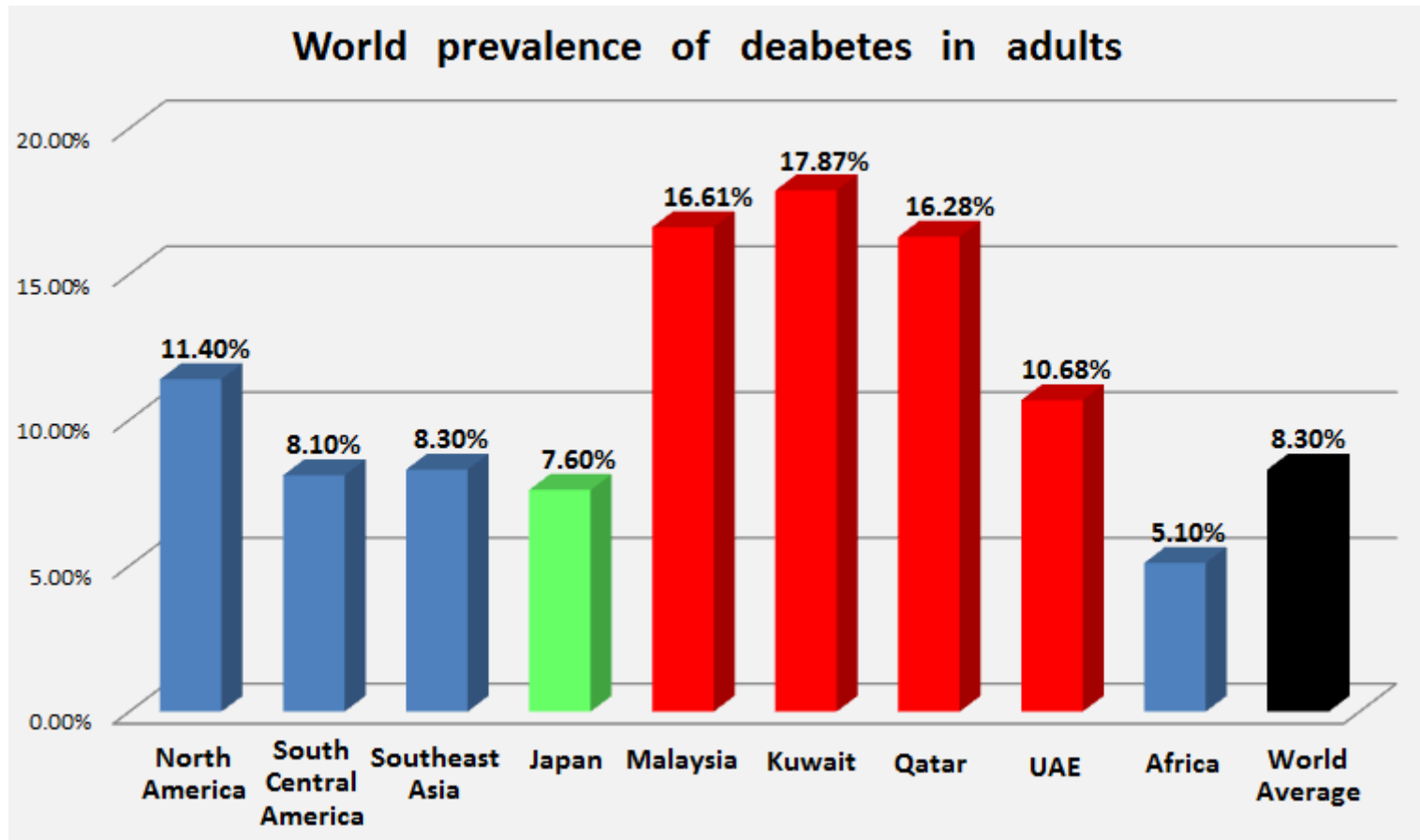
(IDF in 2014)

Diabetes: facts and figures

- Diabetes caused at least **USD 612 billion dollars** in health expenditure in 2014 – **11% of total spending** on adults
- More than **21 million live births** were affected by diabetes during pregnancy in 2013
- In the **Middle East and North Africa**, 1 in 10 adults has diabetes
- In **South-East Asia**, almost half of people with diabetes are undiagnosed

(IDF in 2014)

Diabetic patients in the world



Source: IDF Diabetes Atlas Sixth Edition, International Diabetes Federation 2013

Diabetic foot ulcer

& an
increased risk of
AMPUTATION¹⁴

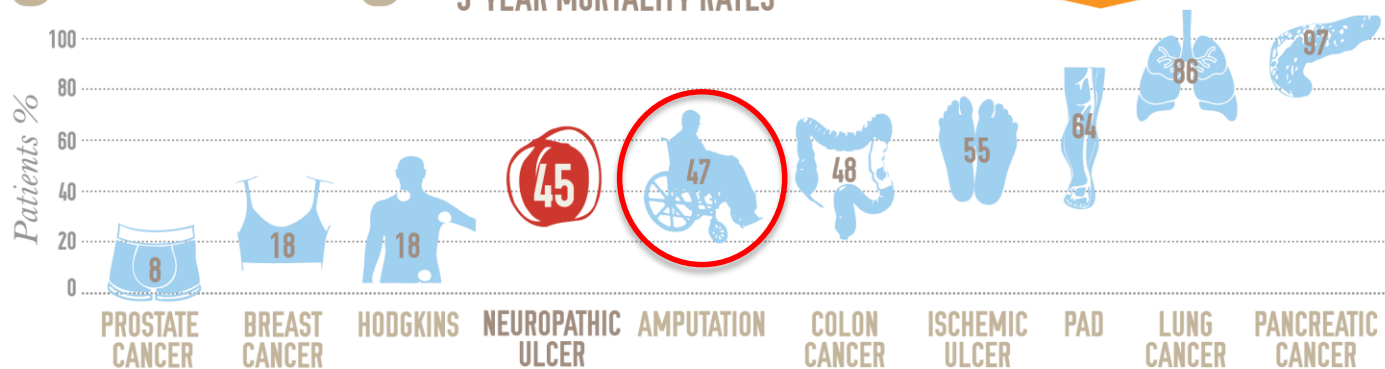
&
increased
COST^{15, 16, 18}



85% of lower limb amputations
in patients with diabetes
ARE PRECEDED BY ULCERATION^{19, 20, 23}

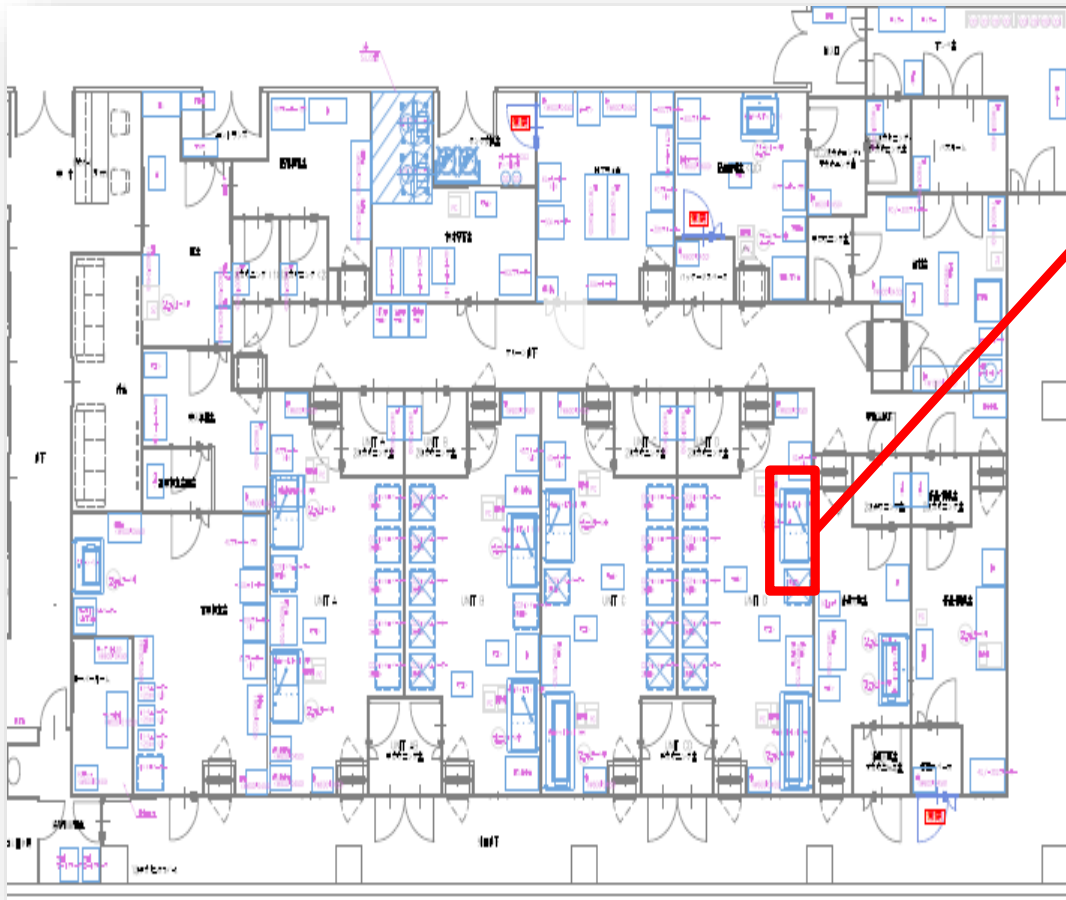
In patients with diabetes,
**HISTORY of a foot ulcer alone
INCREASED MORTALITY RISK BY 47%**

5-YEAR MORTALITY RATES²⁵



Mass production in Cell Processing Center (CPC)

May 2014; CPC Validation
June 2014;
©CPC Design



Single-use manufacturing equipment for cell culture medium

Cell Culture Kit Currently Under Development

★On sale soon

ROHTO Cell Culture Kit



①Medium

- ✓ Animal Origin Free
- ✓ Serum Free
- ✓ GMP* manufacturing
- ✓ Virus Free

②Human Adipose-derived Stem Cell

- ✓ Homogeneous Japanese origin
- ✓ GMP* manufacturing
- ✓ Virus Free (19 types of virus)
- ✓ Research use only

GMP*:Good Manufacturing Practice

Would you join our research?

If you are interested, we'll show you our facilities.

◆ Tokyo



**The Institute of Medical Science
The University of Tokyo**



Rohto Tokyo Laboratory

- ✓ Rohto's Research Laboratory
- ✓ Cell Processing Center

◆ Kyoto



Rohto Research Village Kyoto

- ✓ Research Laboratory
- ✓ Automated cell culture system

Thank you
Rohto Pharmaceutical Co., Ltd.

