Institute for Biostatistics and Informatics in Medicine and Ageing Research

Deep Learning Hackathon
Introduction to Lung-Radgen
Team : LUNG-SQUAD

presented by Sarah Fischer

Institute for Biostatistics and Informatics in Medicine and Ageing Research

LUNG-Radgen

Lung cancer RADioGENomics

Radiology   Genomics
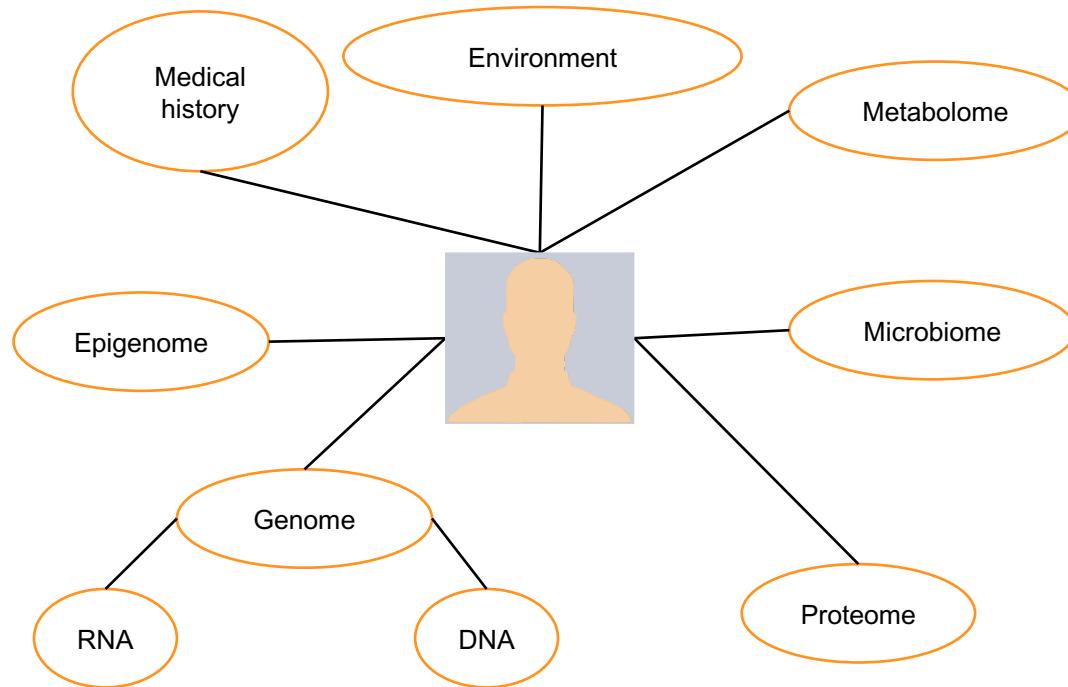
Team

LUNG-SQUAD

Lung SQUamous cell carcinoma   Lung ADenocarcinoma

# Definition of Precision Medicine
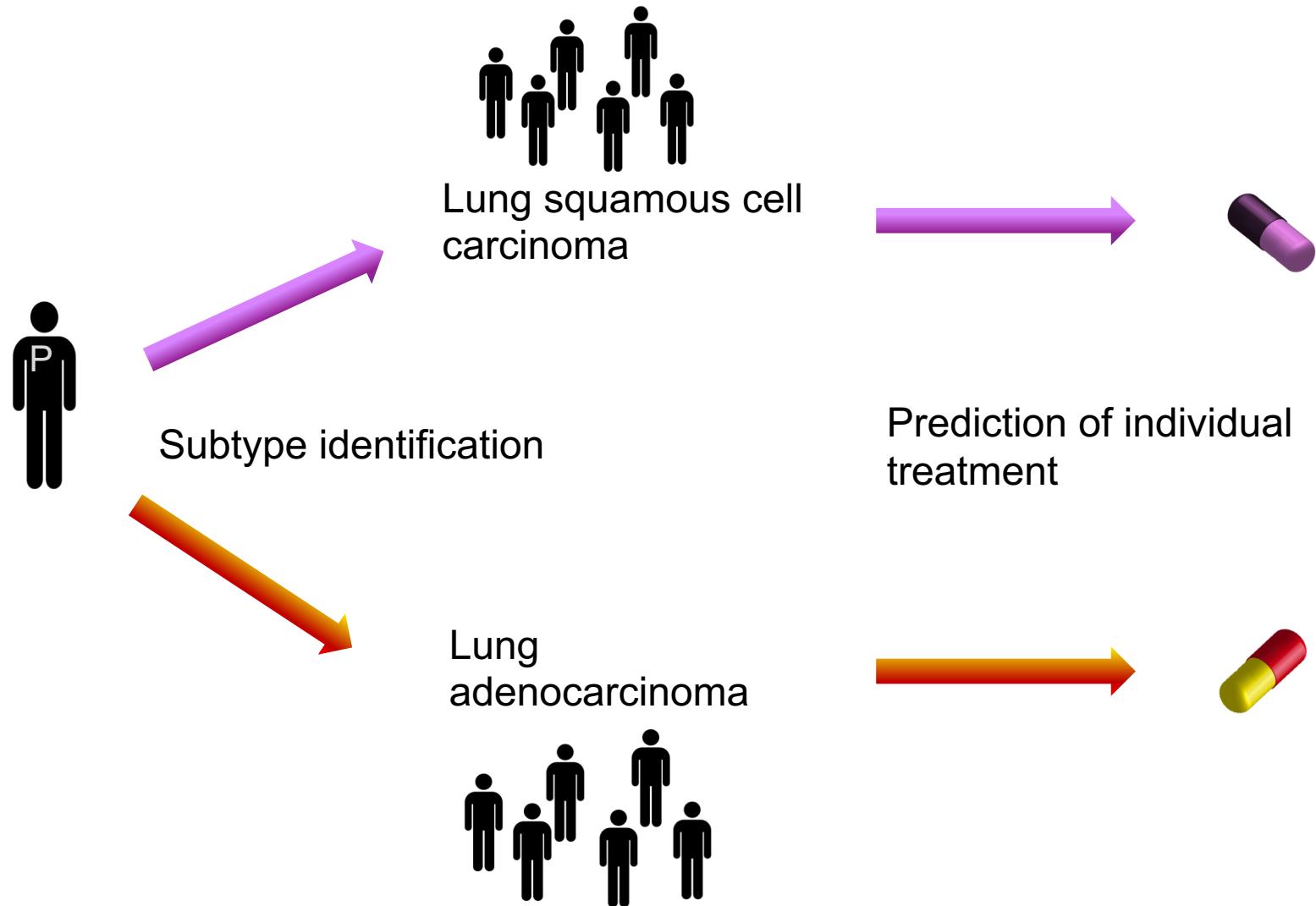
Definition Precision medicine :
Improve medical treatment and develop preventive strategies preserving health
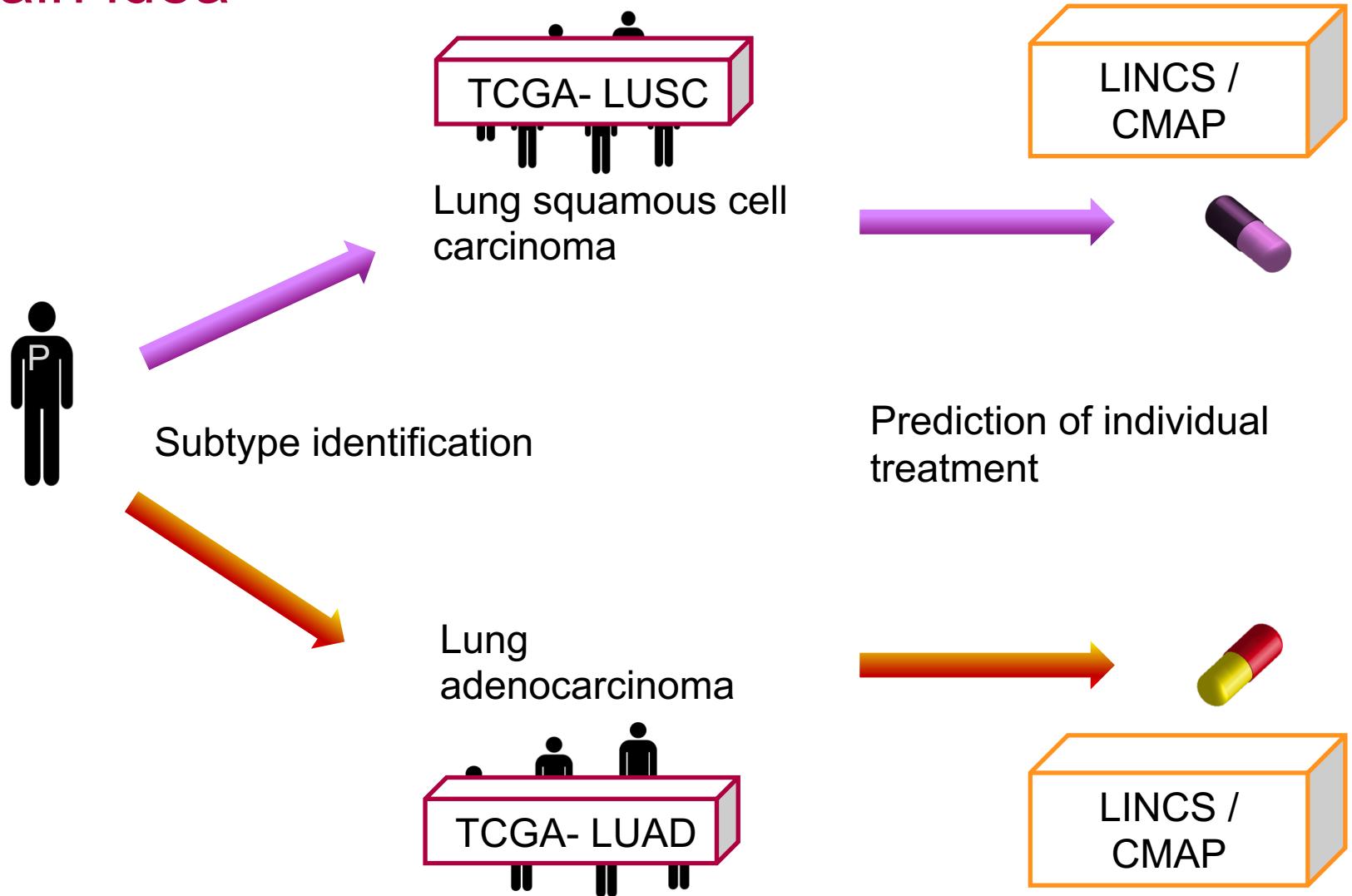
Main idea

Lung squamous cell carcinoma

Lung adenocarcinoma

Subtype identification

Prediction of individual treatment

Main idea

TCGA- LUSC

Lung squamous cell carcinoma

LINCS / CMAP

Subtype identification

Prediction of individual treatment

Lung adenocarcinoma

TCGA- LUAD

LINCS / CMAP
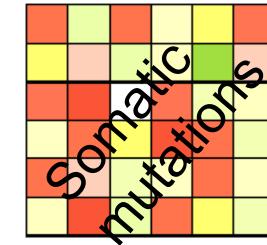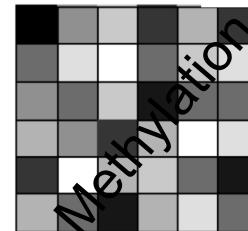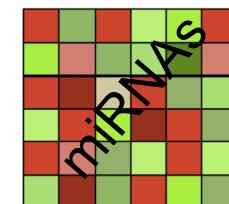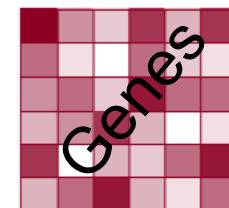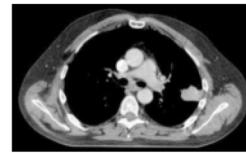
OMICS dataset
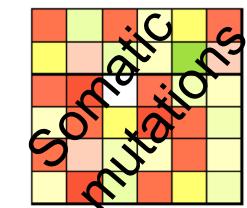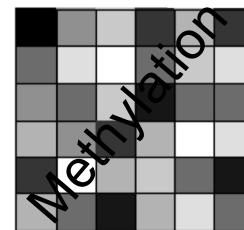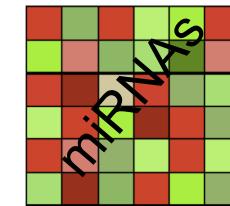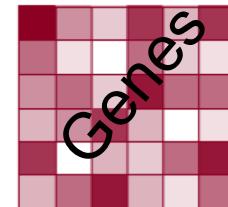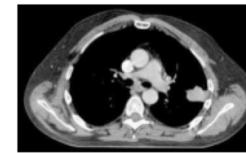
TCGA- LUSC

Lung squamous cell carcinoma
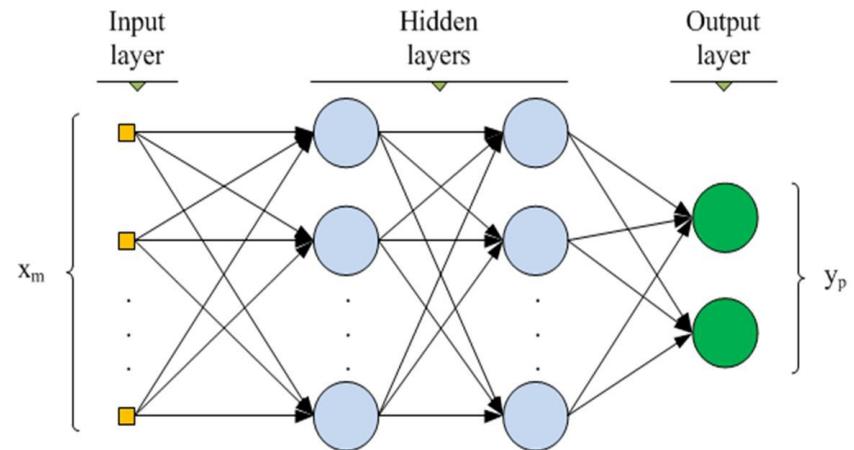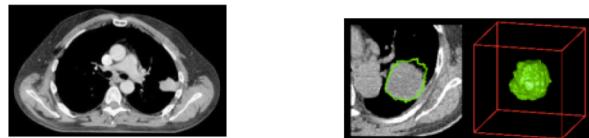
**TCGA- LUAD**

Lung adenocarcinoma

1. Extension of the image sample space

Image segmentation
manually by a physician

Input layer — Hidden layers — Output layer

x_m

y_p
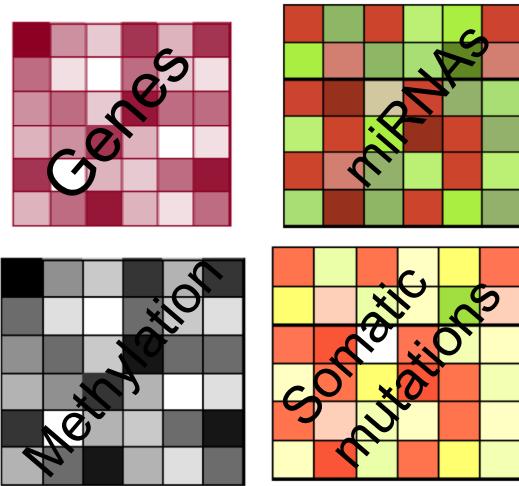
TCGA- LUSC   36 patients
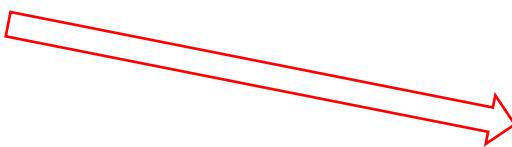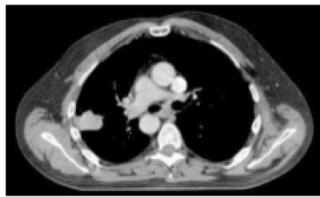
TCGA- LUAD   56 patients

Generating new sample space
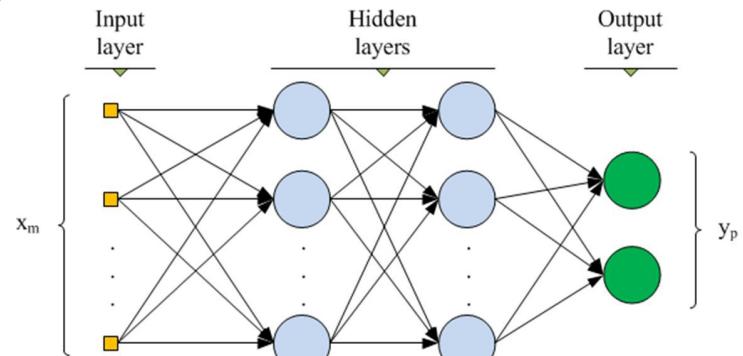
2. Classification of patients based on multiple datasets

Genes

miRNAs

Methylation

Somatic mutations
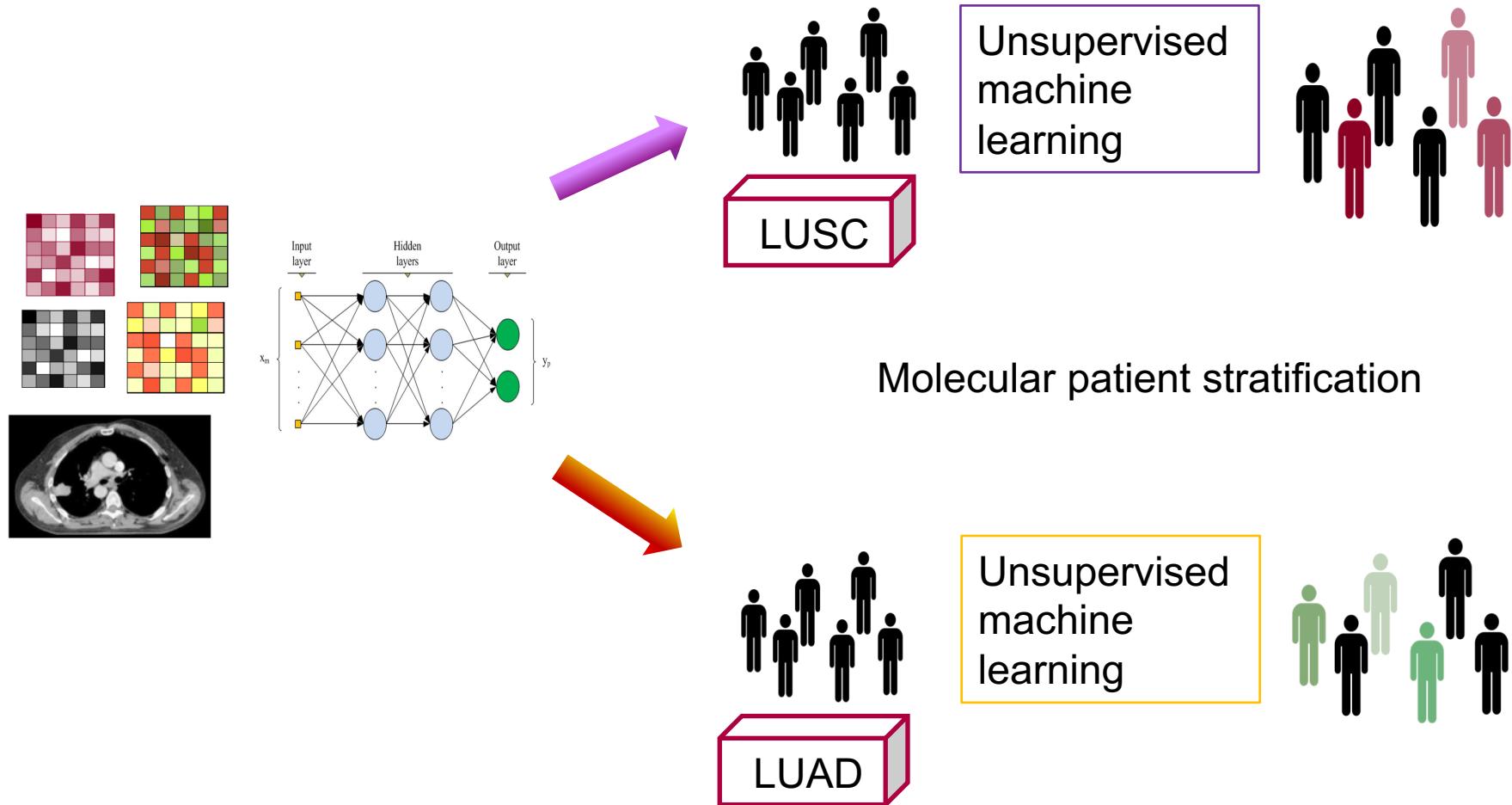
Original & newly generated images

Integration

Input layer

Hidden layers

Output layer

x_m

y_p
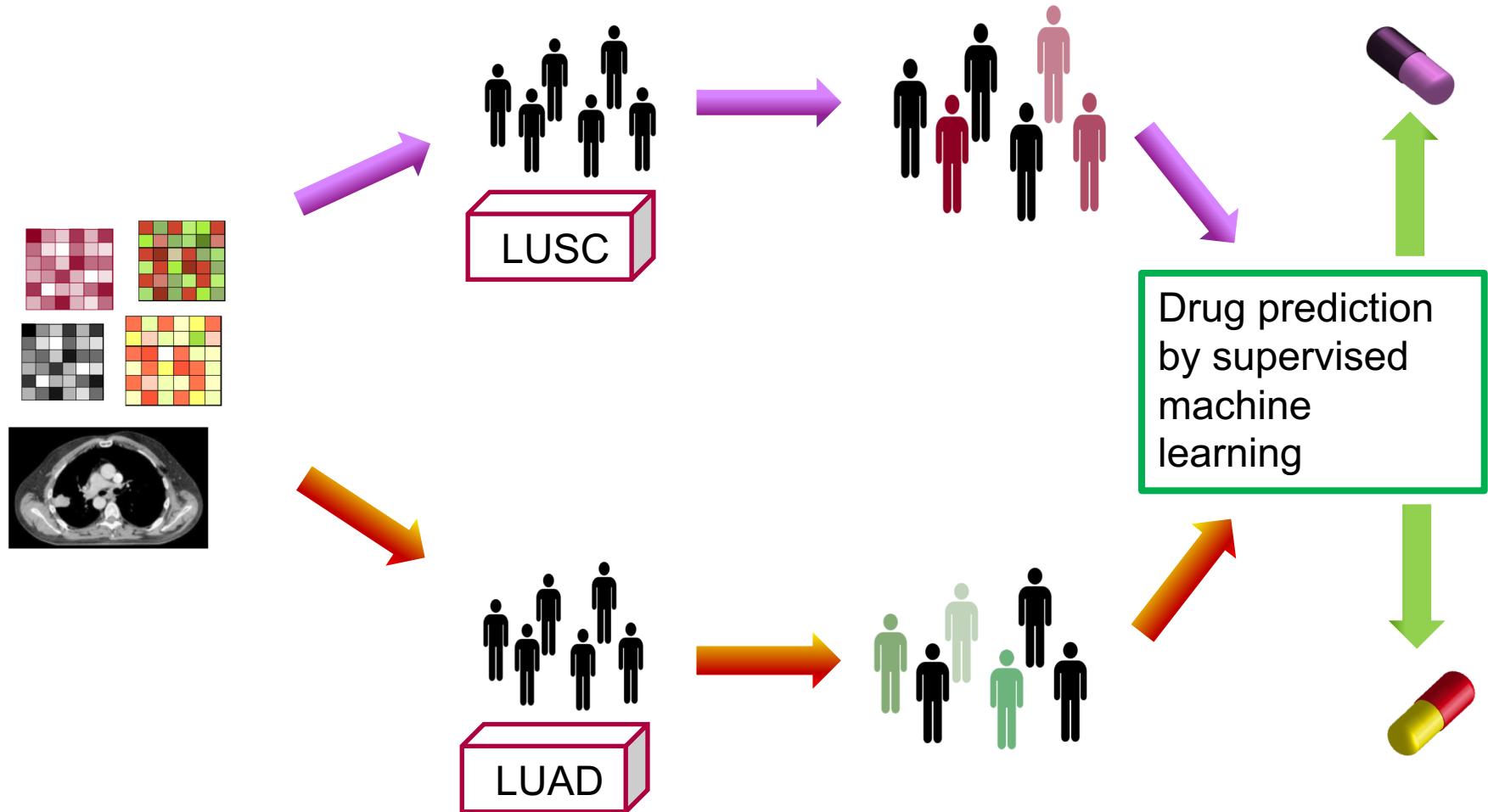
3. Clustering of patients based on molecular profile

Unsupervised machine learning

LUSC

Molecular patient stratification

Unsupervised machine learning

LUAD

4. Drug treatment prediction

LUNG-SQUAD Team

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Helmholtz-Zentrum Dresden-Rossendorf
Sebastian Starke

Thank you for your attention

Institute for Biostatistics and Informatics in Medicine and Ageing Research

Questions ?

Source: http://cdn.htcampus.com/cmsmedia/uploads/files/top-10-steps-successful-group-discussion-gd-1174/GDDDD.jpg

Sources

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