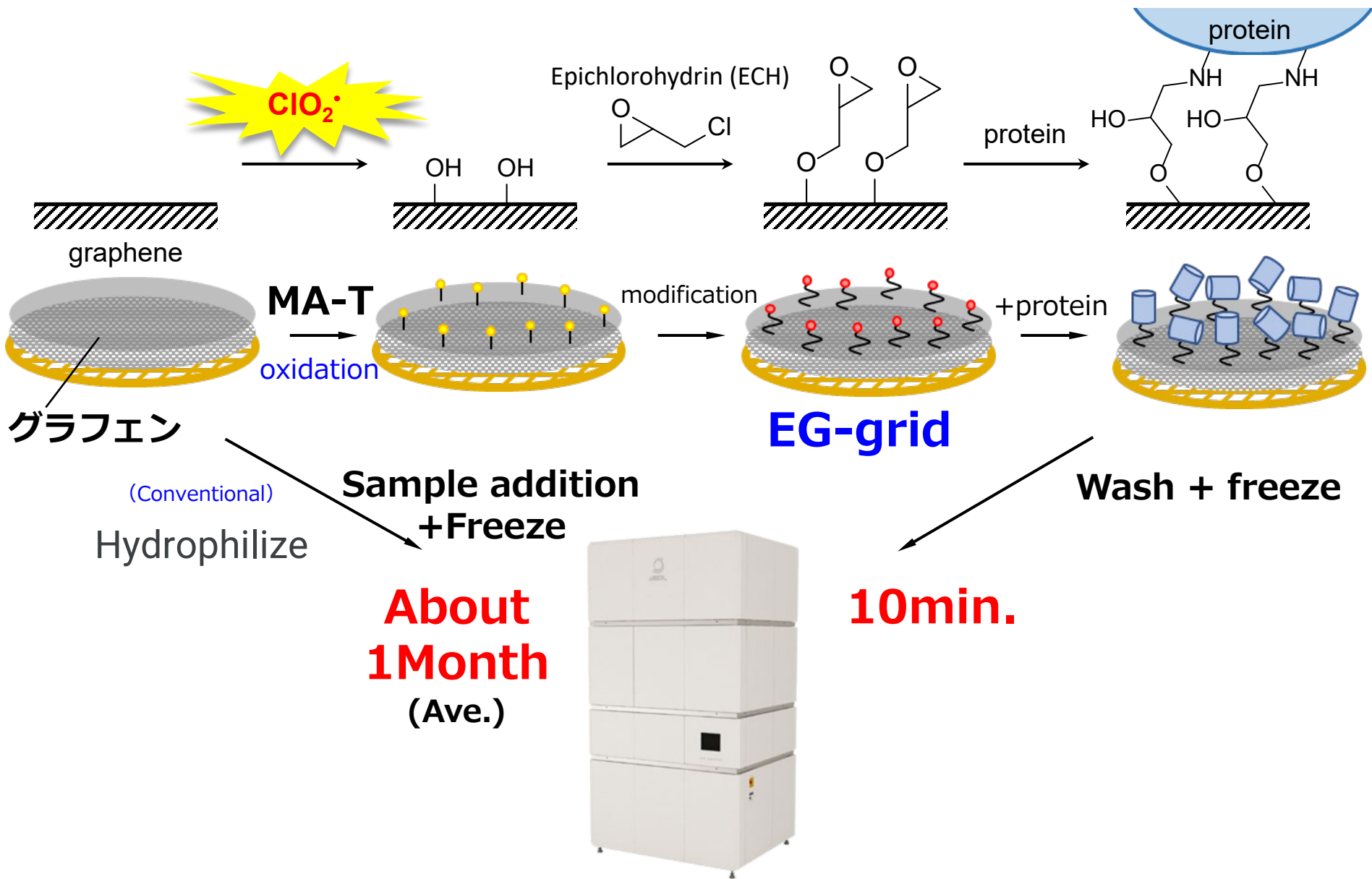


# Introduction of EG-GRID for Cryo-EM

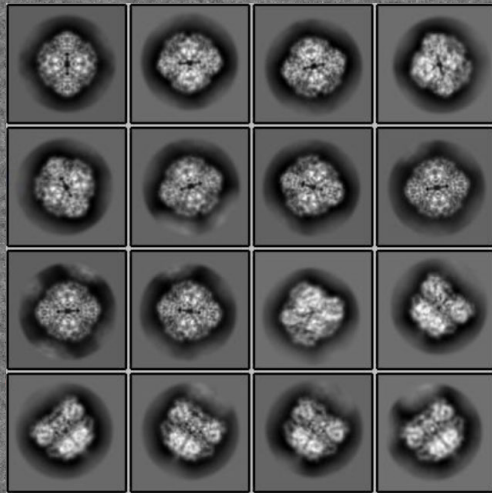
School of Pharmaceutical Sciences  
Osaka University  
Prof. Tsuyoshi INOUE

# Dramatically accelerated pre-analysis preparation: 1 month to 10 minutes



Conventional method

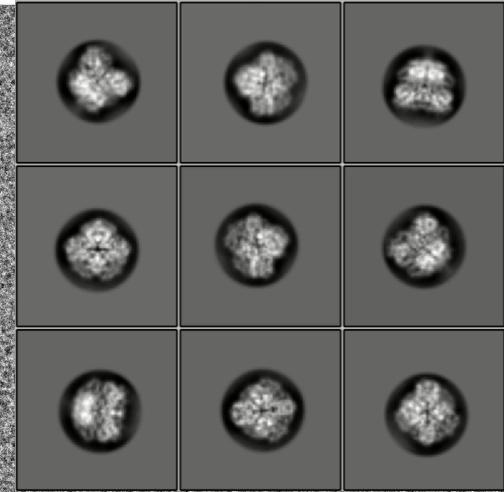
Necessity of tilting to imaging



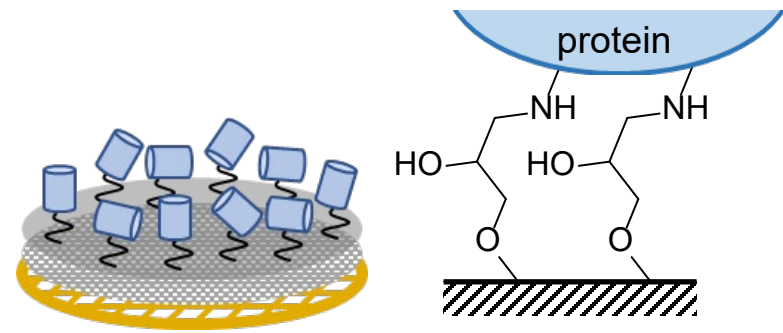
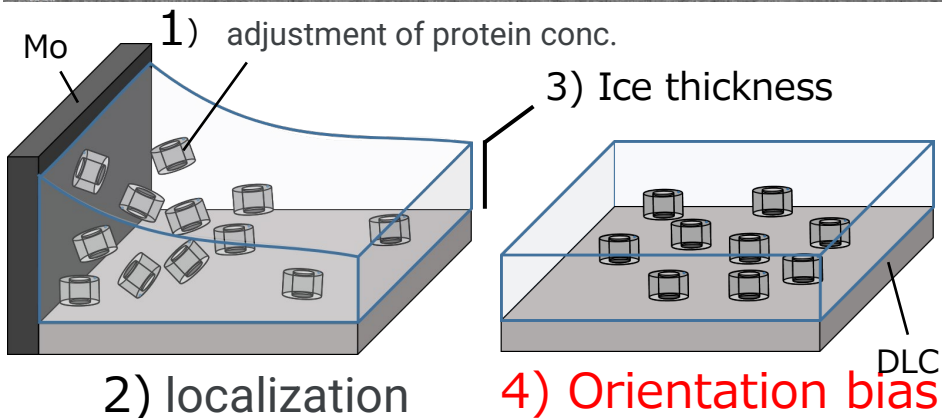
Biased orientation of particles

EG-GRID

→  
Orientation significant change

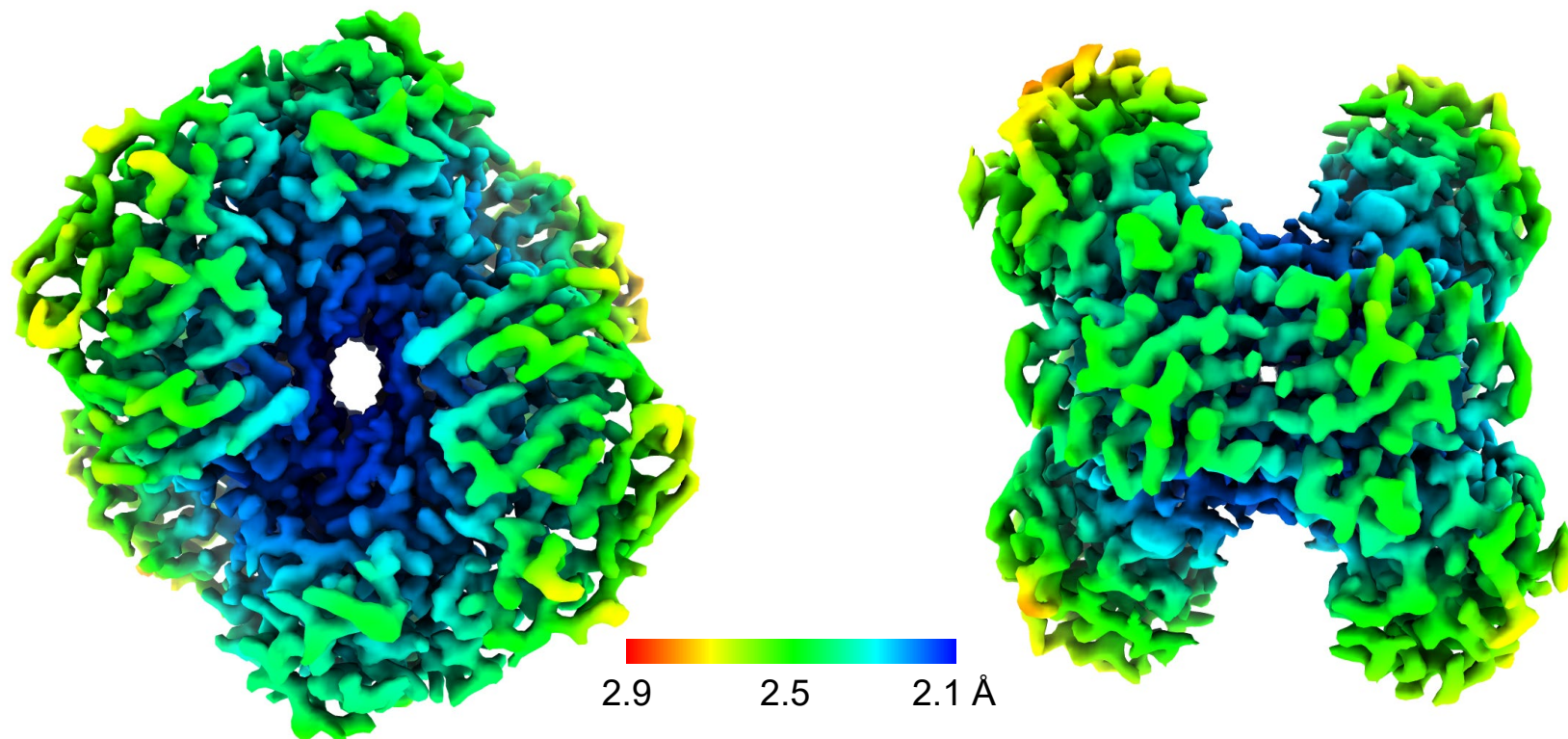


GAPDH:  
Glyceraldehyde 3-phosphate dehydrogenase) 20 nm



# Example : Structural analysis of Protein-B (Cryo-EM)

4



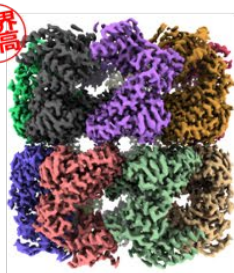
	conventional	EG-GRID
number of images	4,415	<b>241</b>
Effective number of particles	813,828	<b>88,731</b>
Effective number of particles per image	184.3	<b>368.2</b>
resolution(Å)	2.3	<b>2.15</b>

Reach higher resolution with less than 1/20th of the number of images

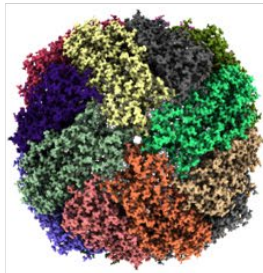


**significant efficiency**  
(2 hours shooting time)

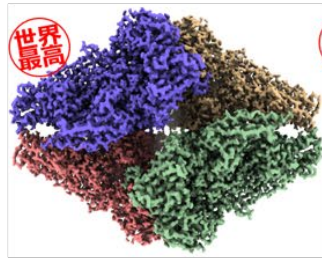
# We have many achievements



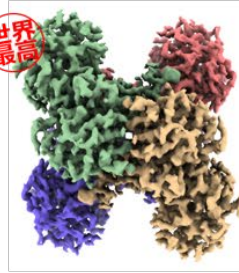
GroEL  
1.99 Å



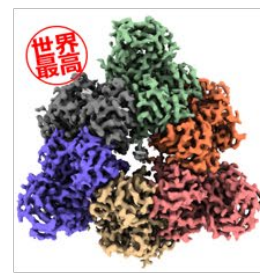
Apoferritin  
1.29 Å  
(最高1.22Å)



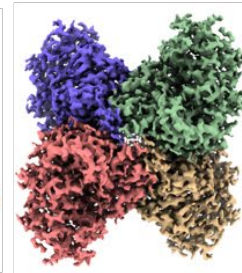
$\beta$ -galactosidase  
1.81 Å



GAPDH  
2.16 Å



V1-ATPase  
3.03 Å



Aldolase  
2.28 Å

Sci. Rep.  
2023

## SARS-CoV-2 spike proteins

- VHH complex: 3種
- Fab complex: 3種
- 2種
- mutant: 2種

mBio  
投稿中

Sci Rep.  
2022

Accelerating  
antibody drug  
development

Analysis  
completed  
within 3 days !

BA.4/5  
 $IC_{50} = 0.29 \mu\text{g/ml}$

BQ1.1  
 $IC_{50} = 4.20 \mu\text{g/ml}$

XBB  
 $IC_{50} = 0.45 \mu\text{g/ml}$

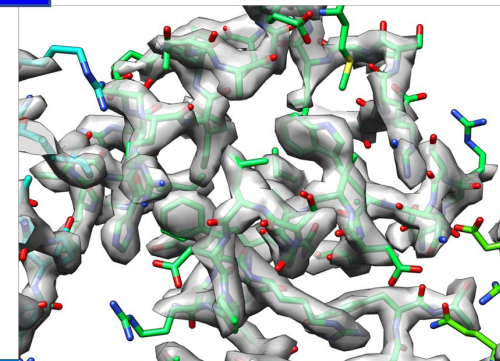
→ PAT.pending (特願2021-70471)

## 薬物探索の基盤

## Gridにアポ型蛋白結合

Protein X  
2.7 Å

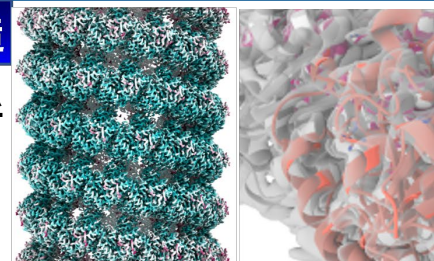
分解能が1Å  
以上改善  
薬物探索  
可能か調査



## 新規抗菌標的構造

フィラメントで解析  
2.7 Å

(1回のグリッド調製)



Nat. Comm., in press

# Looking for joint research with companies. Try EG-GRID with your protein !

- Perfect confidentiality.  
(highly confidential compounds? No problem.)
- No cryo-EM? You can use Osaka University's cryo-EM.
- Only 5ul (0.1~1 mg/ml) protein is required

Many companies have already started joint research.  
First, check the performance through trial joint research.