



生物育种专业·基因编辑技术课程

第五章：移花接木—引导编辑器Prime editors

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西北农林科技大学



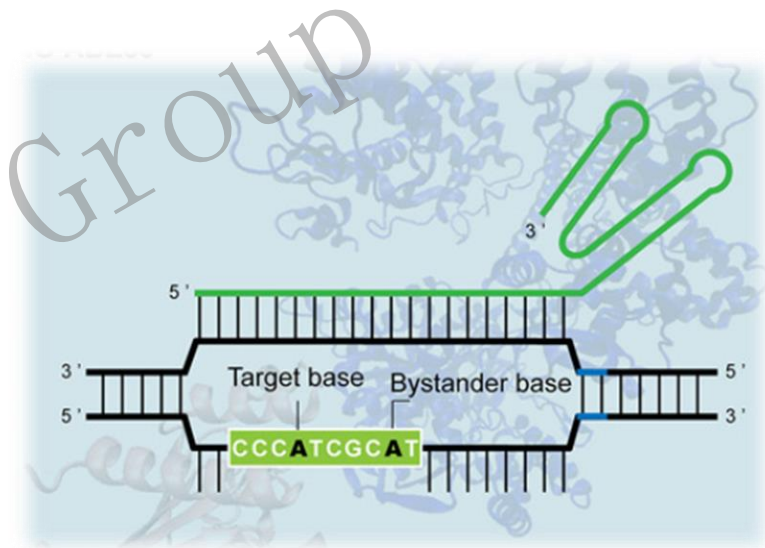
拓展思考3:

精准的碱基编辑有什么意义?

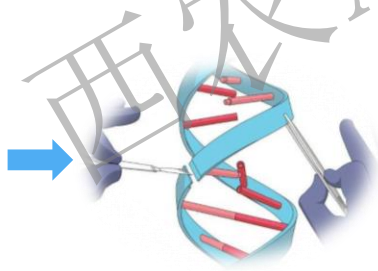
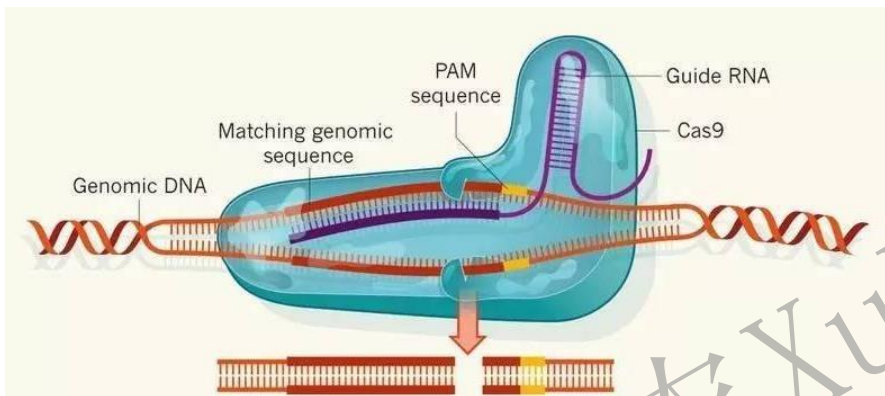
BEs存在问题: 旁编辑, gRNA依赖性

脱靶, gRNA非依赖性脱靶?

如何利用BEs进行基因“敲除”?



坏掉的剪刀—“nCas9”和“dCas9”



➤ 以CRISPR/Cas9为例

➤ **Cas9缺口酶** (nCas9, Cas9n) :
D10A or H840A

➤ **“死掉”的Cas9** (dead Cas9, dCas9):
D10A and H840A

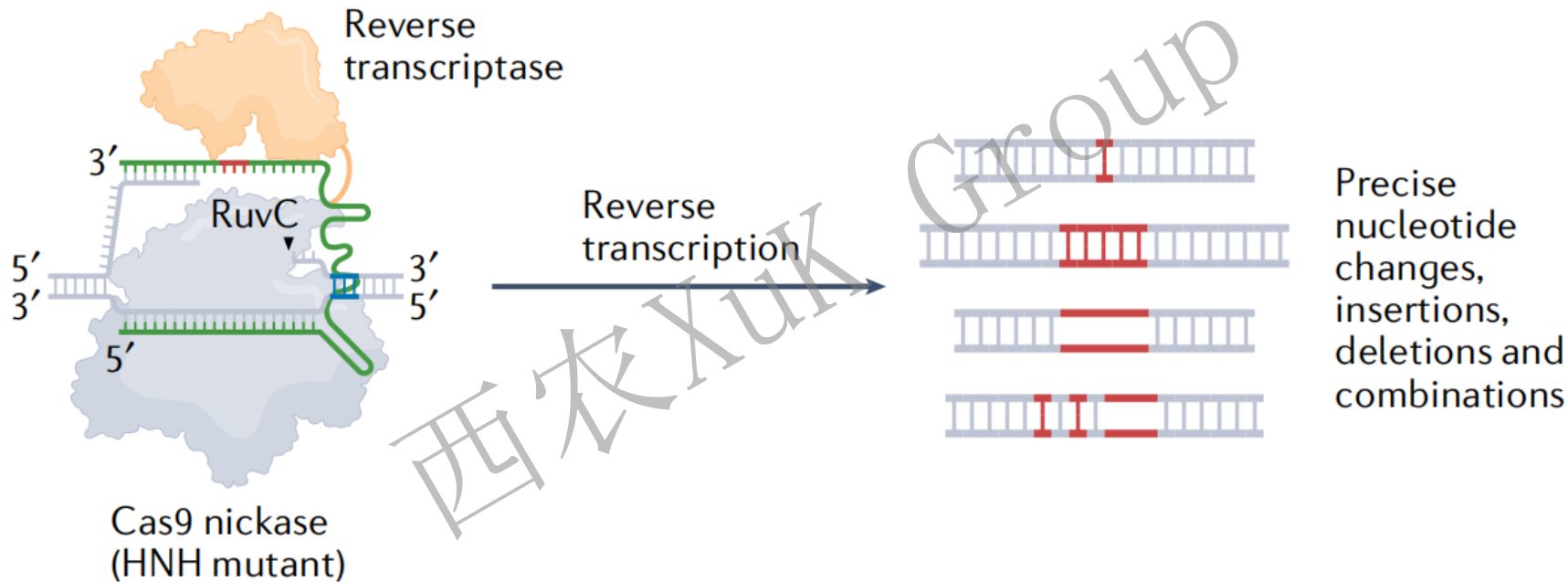


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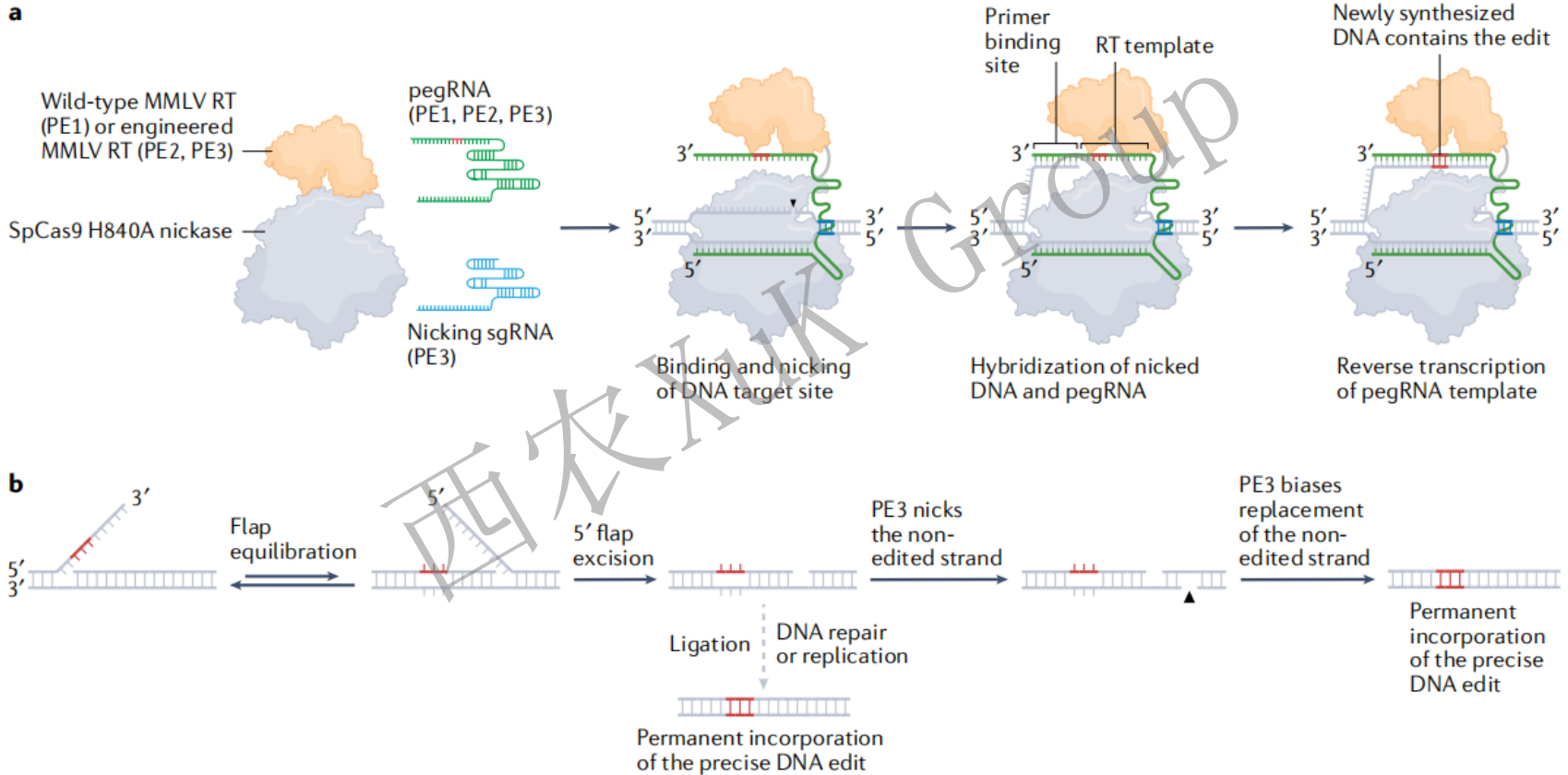
- 01 PE1 and beyond**
- 02 PE3 and beyond**
- 03 circular RNA PEs**
- 04 twinPE and beyond**
- 05 Click editors**



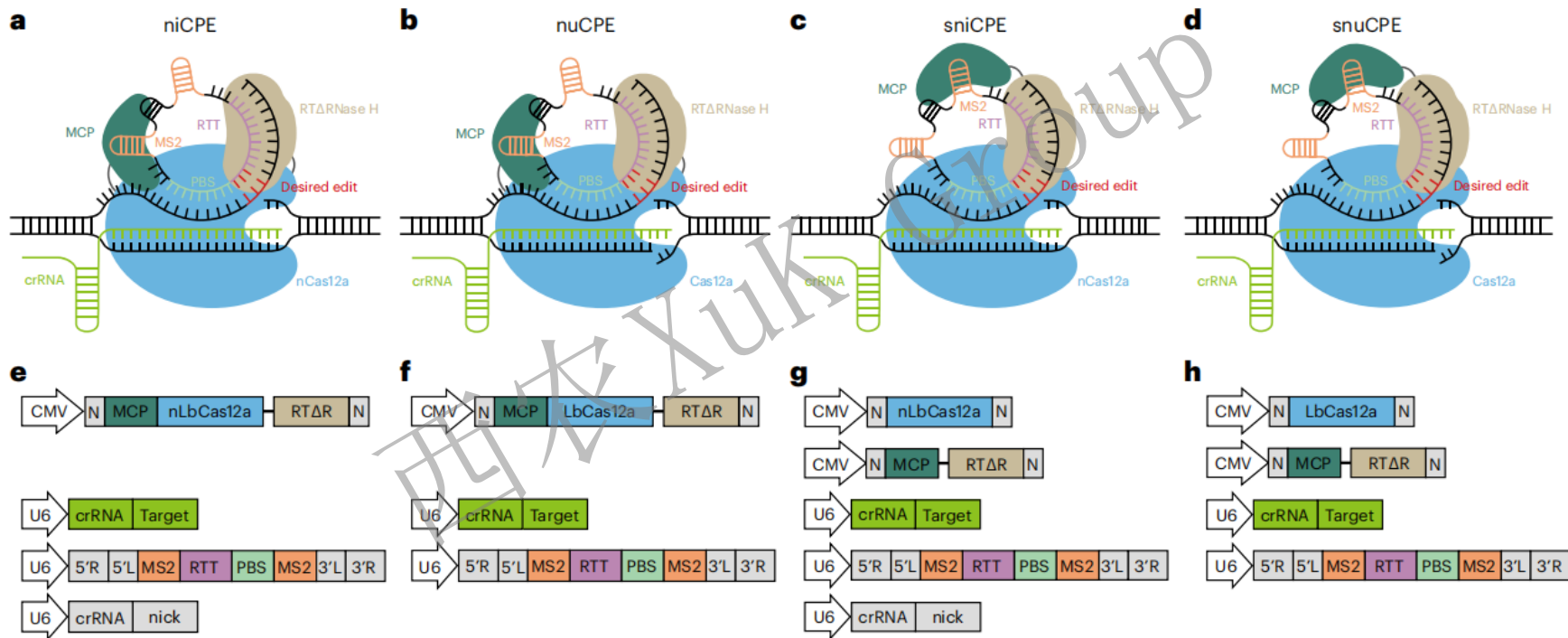
1. PE1 and beyond



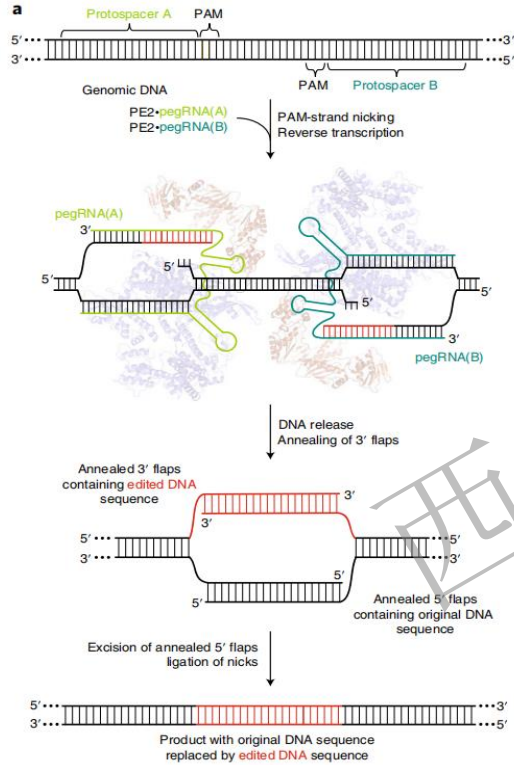
2. PE2 and beyond



3. circular RNA-mediated PEs



4. twinPE and beyond



b Prime editing with serine integrases

TwinPE and Bxb1

nCas9-RT
prime editor

2× pegRNA

Bxb1

DNA target

Twin prime editing

attB insertion
and sequence
deletion

Donor
gene
attP

Bxb1-mediated
integration

attL attR
DNA donor integration

PASTE

nCas9-RT-Bxb1
fusion

pegRNA

Nicking
sgRNA

DNA target

PE3 editing

attB insertion

Donor
gene
attP

Bxb1-mediated
integration

attL attR
DNA donor integration





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