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# ABRC QUALITY CONTROL

updated 3/12/2019

# Why Talk About QC Now?

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- Increased number of stocks in the collection
- Increasing number of specific types of stocks that require more attention
- The development of new methodologies producing a number of new types of resources
- Time required to collect certain number of user complaints
- **We have always done QC!**
- In the past few years, it has grown to become a separate part of our operation
- We have collected for 4 years worth of data; only data from last year are presented

# Types of QC performed at ABRC

	DNA	Seed
Internal QC	<ul style="list-style-type: none"><li>• New donation</li><li>• DNA stock replication</li></ul>	<ul style="list-style-type: none"><li>• New donation</li><li>• Seed reproduction</li><li>• Seed preservation</li></ul>
User complaints	<ul style="list-style-type: none"><li>• Insert in a clone not present</li><li>• Wrong locus</li><li>• Wrong stock</li></ul>	<ul style="list-style-type: none"><li>• Cannot identify insertion in a T-DNA line</li><li>• Germination problems</li></ul>

# QC Methods

	DNA	Seed
QC Method	<ul style="list-style-type: none"><li>• Sequencing</li><li>• Restriction digest</li><li>• PCR</li></ul>	<ul style="list-style-type: none"><li>• Seed QC<ul style="list-style-type: none"><li>Germination tests</li><li>Seed microscopy</li><li>T-DNA lines genotyping</li></ul></li><li>• Environmental control</li><li>• Biological pest control</li></ul>

# User Input

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We welcome any feedback you can provide for the stocks we distribute. This information can include:

- Verification of an insertion
- PCR results
- Sequencing results
- Incorrect background
- Problem with germination / viability
- Problem finding the insertion
- Unexpected genotype/zygosity
- Incorrect stock

Your comment can be added directly to the stock record in TAIR. Go to the stock detail page, scroll to the bottom, and **click on “Add My Comment”**. If you have noted a problem, ABRC will do the appropriate Quality Control and post our results there.

# User Complaints: Germination

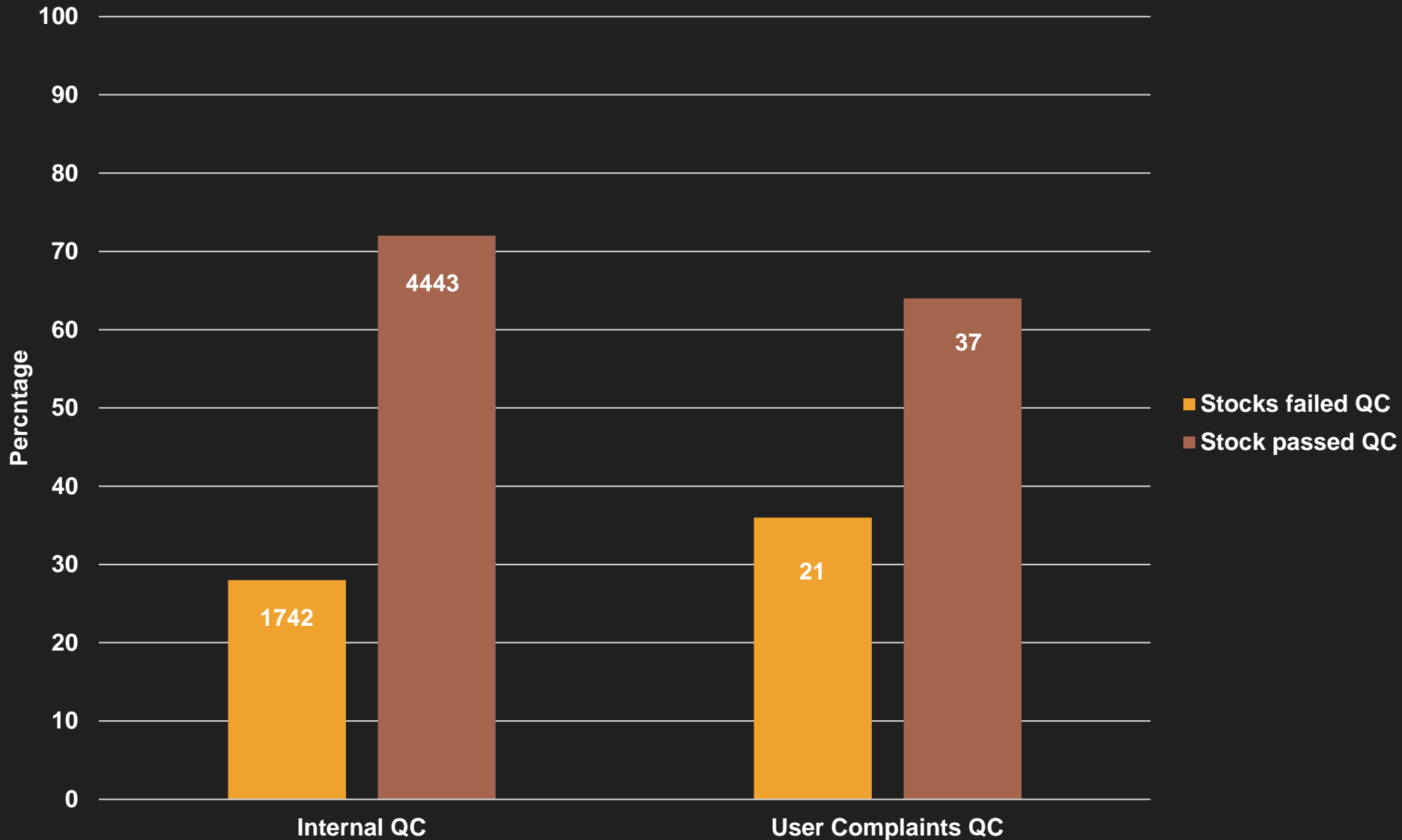
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What happens when a researcher reports a problem with germination?

- We will send the researcher a new batch of seeds
- We will perform a germination test
- We will let the researcher know the results of our test
- If there is a discrepancy we will work with the researcher trying to understand what that discrepancy is
- If the stock is below 81% germination the stock will be replanted

# Germination Test Results

## Seed Quality Control 2018



# User Complaints: T-DNA Insertion Lines

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## Problems:

- Cannot identify insertion in a T-DNA insertion segregating line
- SALK\_C\* confirmed line is segregating
- Cannot identify insertion in a SALK\_C\* confirmed line

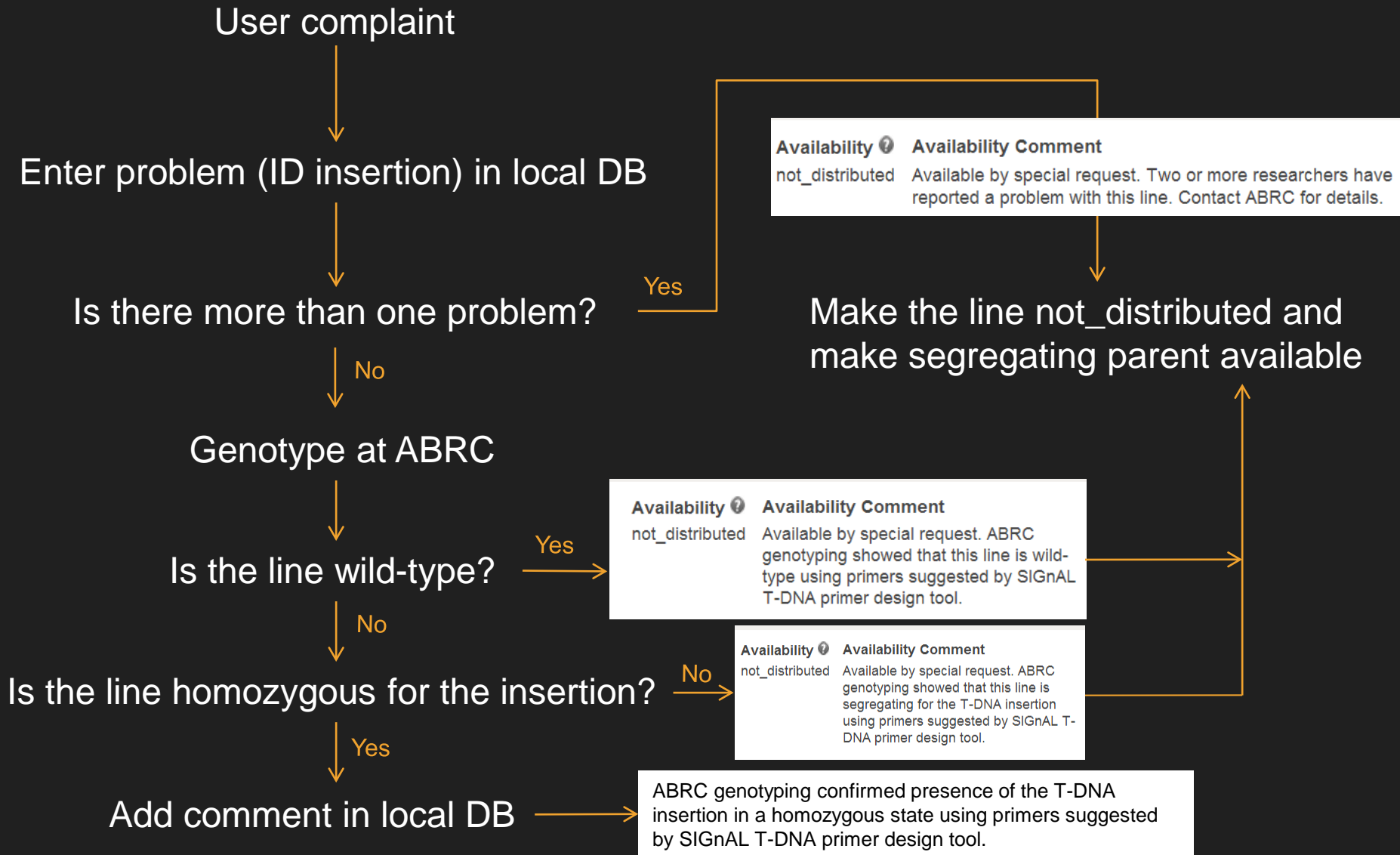
\*SALK\_C: confirmed from SALK, SAIL, GABI-Kat and WisconsinDs-Lox collections

## Action:

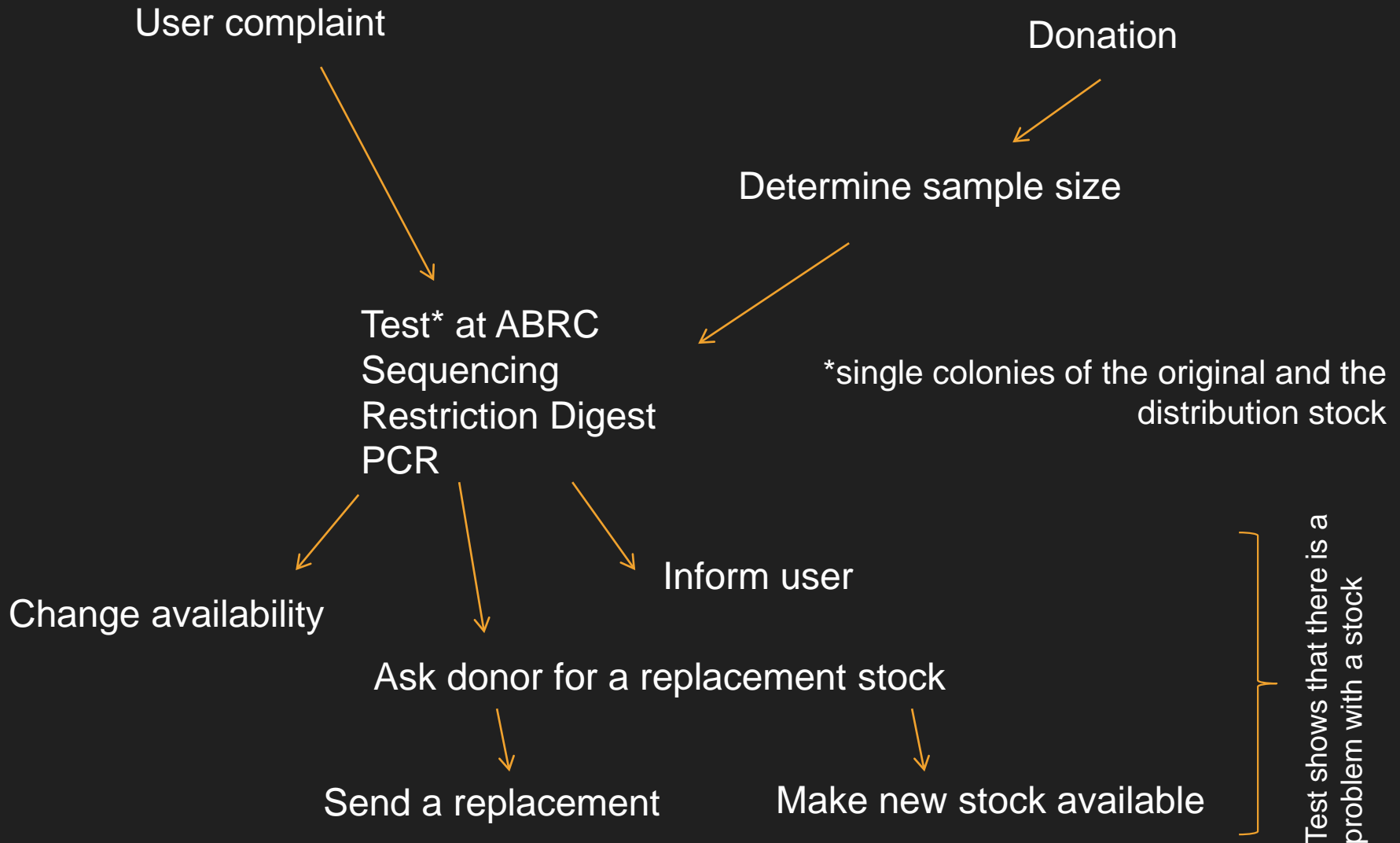
- Problems with identifying an insertion are flagged in the local database
- When two researchers report a problem, we make that line “not\_distributed” and only available by special request
- We test the lines with one problem



# T-DNA Insertion Lines – QC Flow

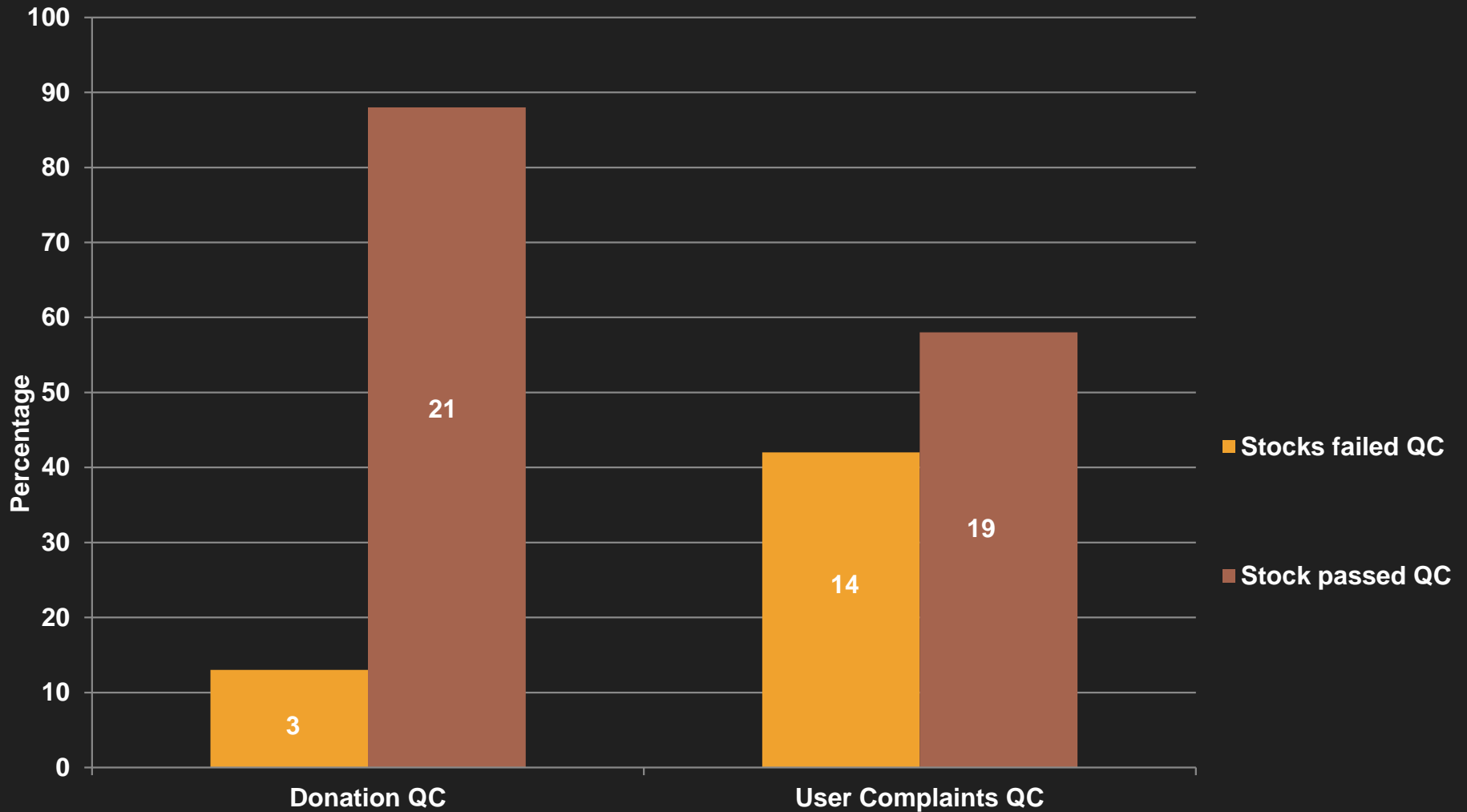


# DNA Stocks QC Flow



# DNA Stocks: QC Results

## DNA Quality Control 2018



# Seed Stocks: Error Rate

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$$\text{Error Rate} = \frac{\text{number of user complaints}}{\text{number of stocks ordered}}$$

## Germination Problems (January 2018-December 2018)

- Reported Error Rate:  $58/68,404 = 0.0008$  (between 4 and 5 sigma level)
- Confirmed Error Rate:  $42/68,404 = 0.0006$  (between 4 and 5 sigma level)

## T-DNA Lines Insertion ID Problems (October 2007-December 2018)

- Reported Error Rate:  $1,014/616,306 = 0.0016$  (between 4 and 5 sigma level)
- Confirmed Error Rate: estimated at  $0.001$  (between 4 and 5 sigma level)