
ABRC QUALITY CONTROL

updated 1/31/2017

Why Talk About QC Now?

- 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 2 years worth of data; only data from last year is presented

Types of QC performed at ABRC

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

QC Methods

	DNA	Seed
QC Method	<ul style="list-style-type: none">• Sequencing• Restriction digest• PCR	<ul style="list-style-type: none">• Seed QC<ul style="list-style-type: none">Germination testsSeed microscopyT-DNA lines genotyping• Environmental control• Biological pest control

User Input

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.

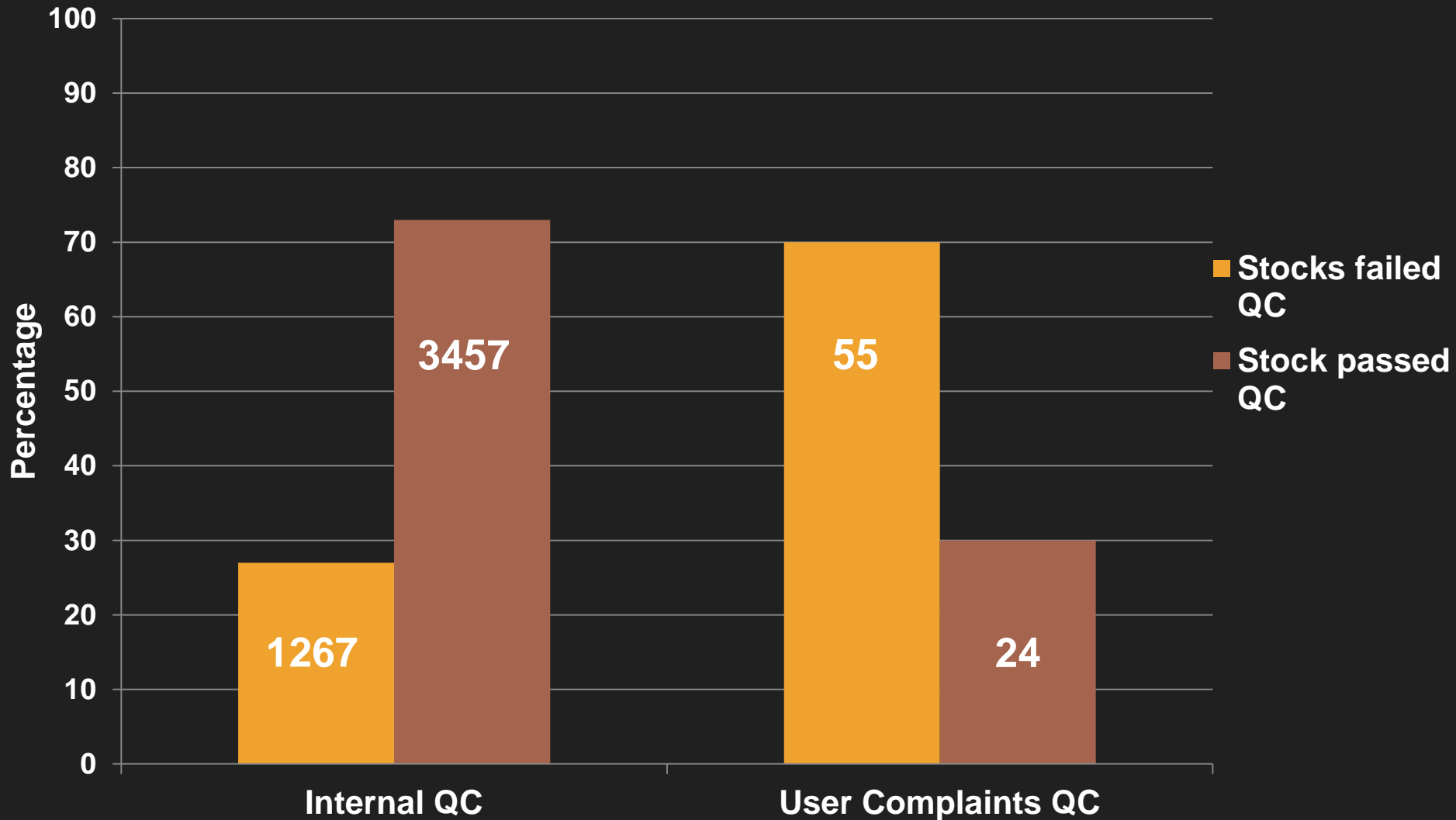
User Complaints: Germination

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 2015-2016



User Complaints: T-DNA Insertion Lines

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

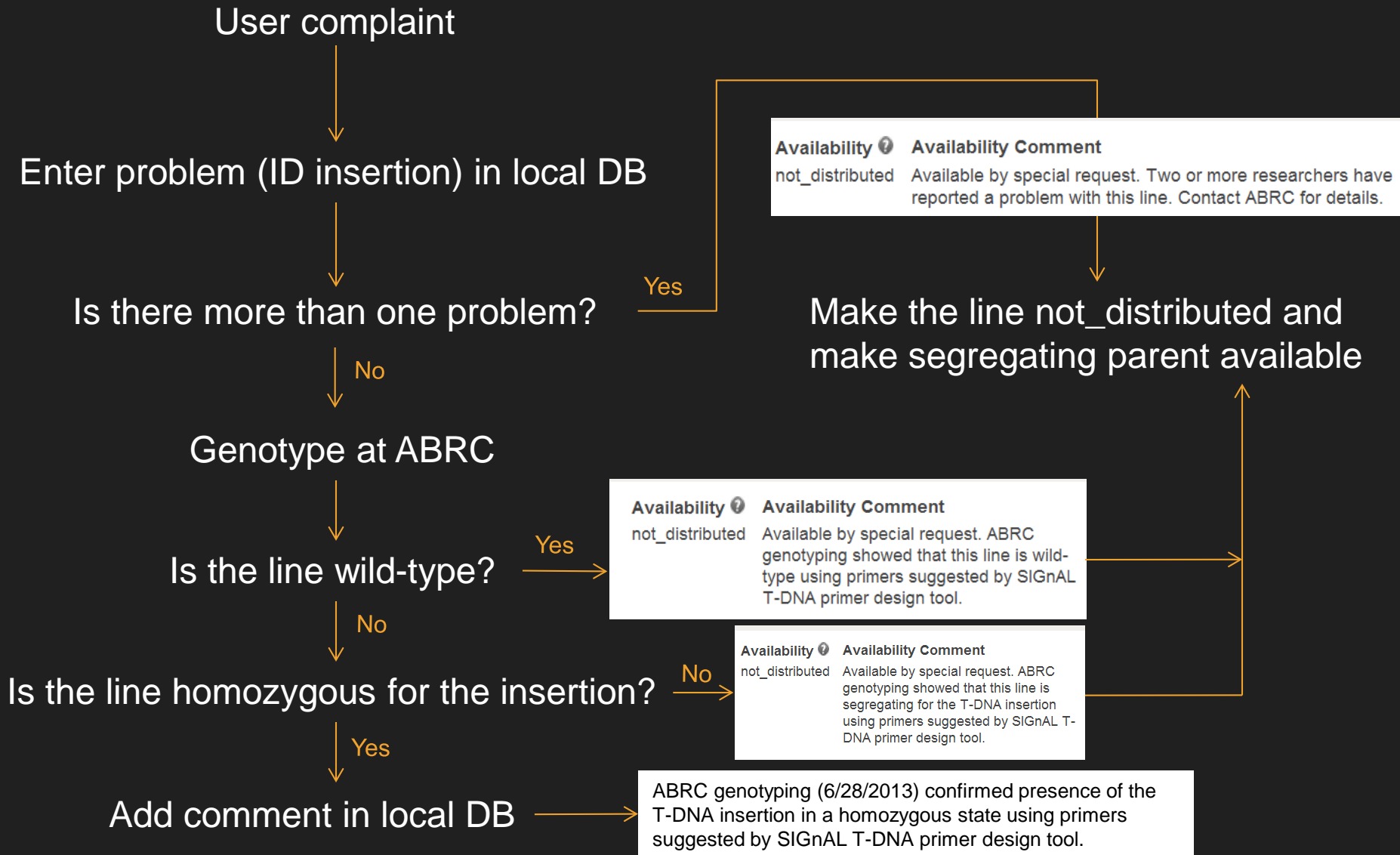
*SALK_C: confirmed from SALK, SAIL, GABI-Kat and WisconsinDs-Lox collections

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

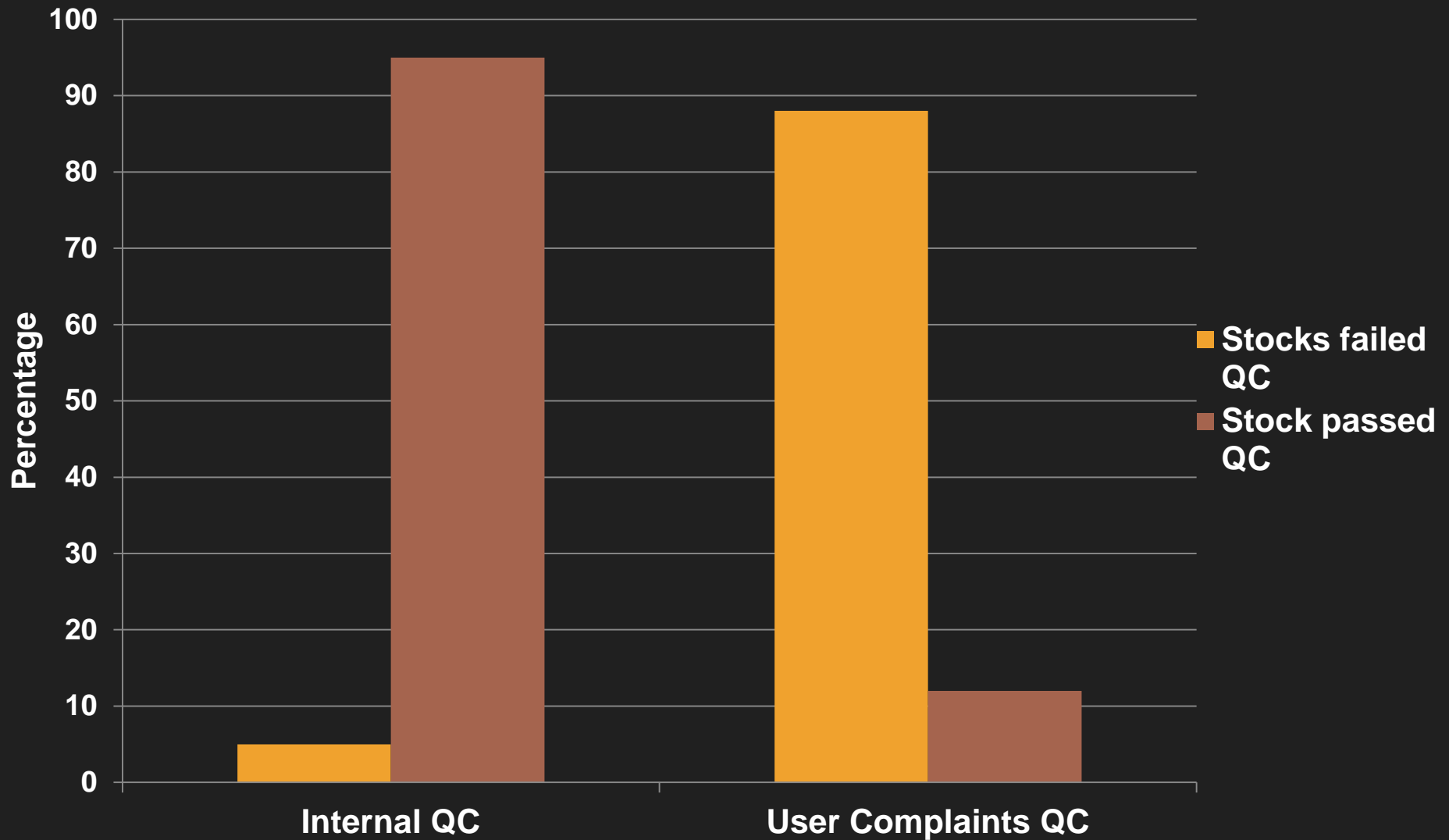
	One Problem	Two Problem
FileMaker DB	+	+
TAIR	Add as a comment	+

T-DNA Insertion Lines – QC Flow

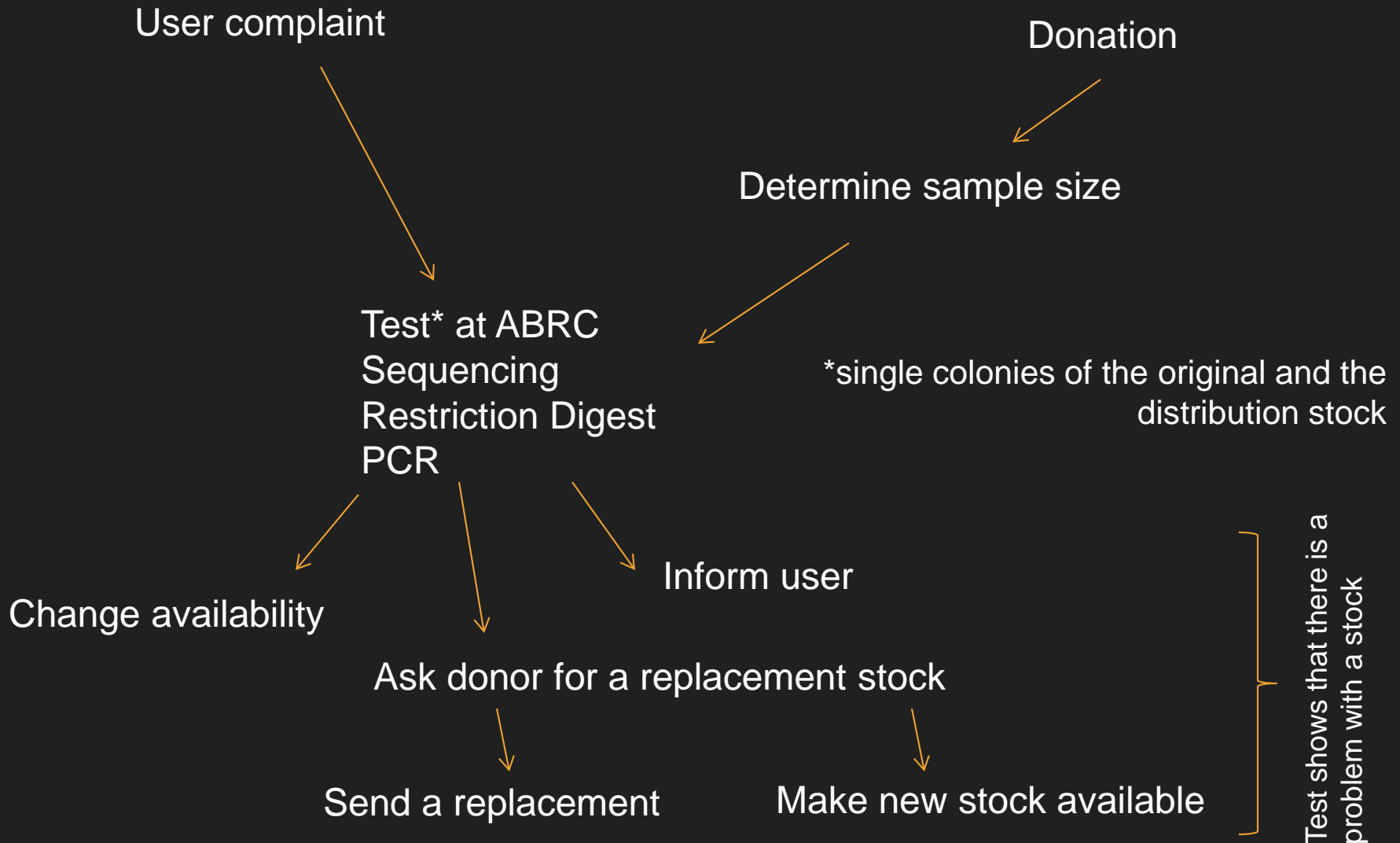


Genotyping Results

Genotyping 9/2015-1/2017

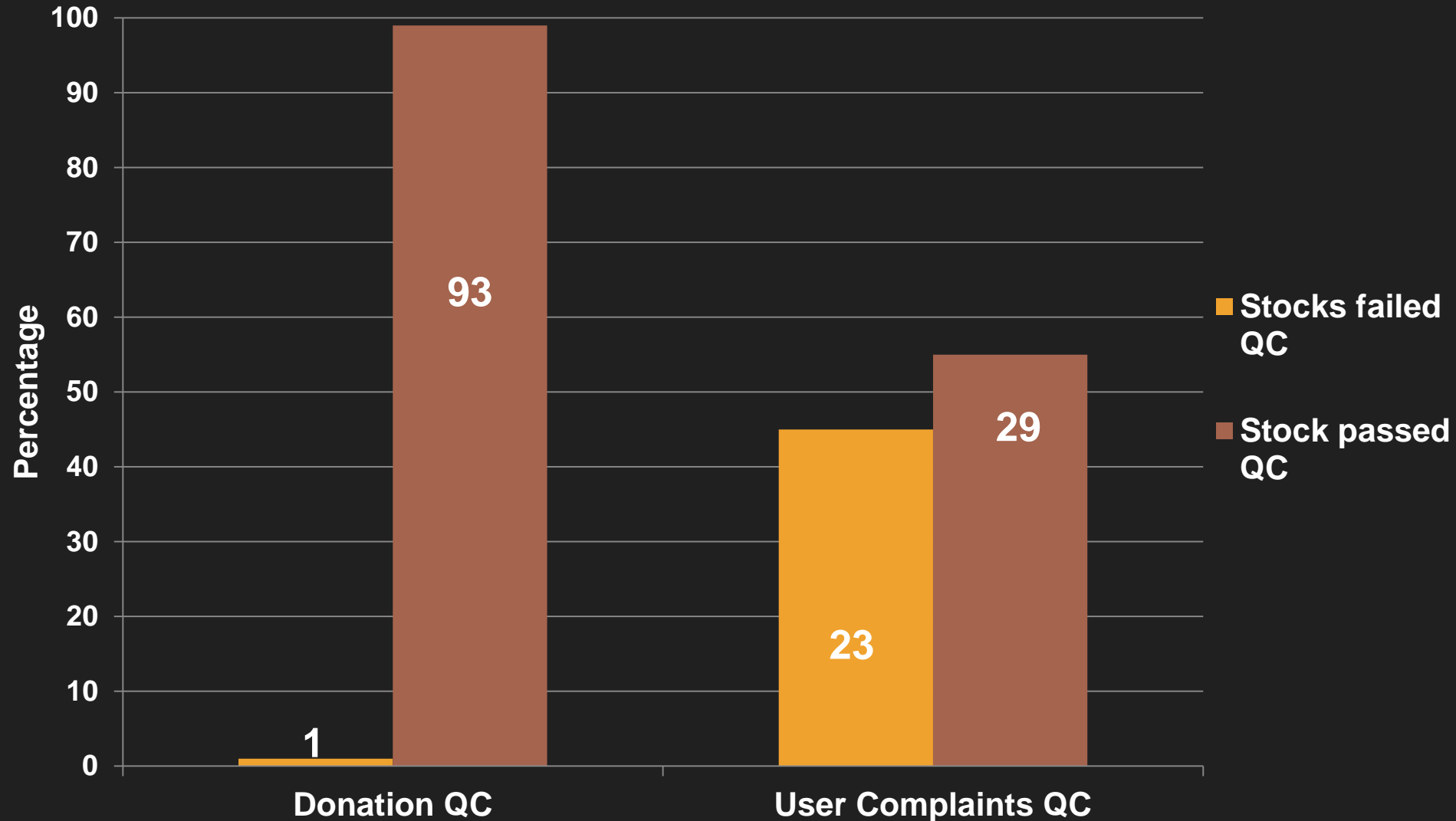


DNA Stocks QC Flow



DNA Stocks: QC Results

DNA Quality Control 2015-2016



Seed Stocks: Error Rate

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

Germination Problems (April 2016-January 2017)

- Reported Error Rate: $70/77,746 = 0.0009$ (between 4 and 5 sigma level)
- Confirmed Error Rate: $48/77,746 = 0.0006$ (between 4 and 5 sigma level)

T-DNA Lines Insertion ID Problems (October 2007-January 2017)

- Reported Error Rate: $890/519,095 = 0.0017$ (between 4 and 5 sigma level)
- Confirmed Error Rate: estimated at 0.001 (between 4 and 5 sigma level)