Diagnostic Assay Validation Network: Validation Tools and Resources

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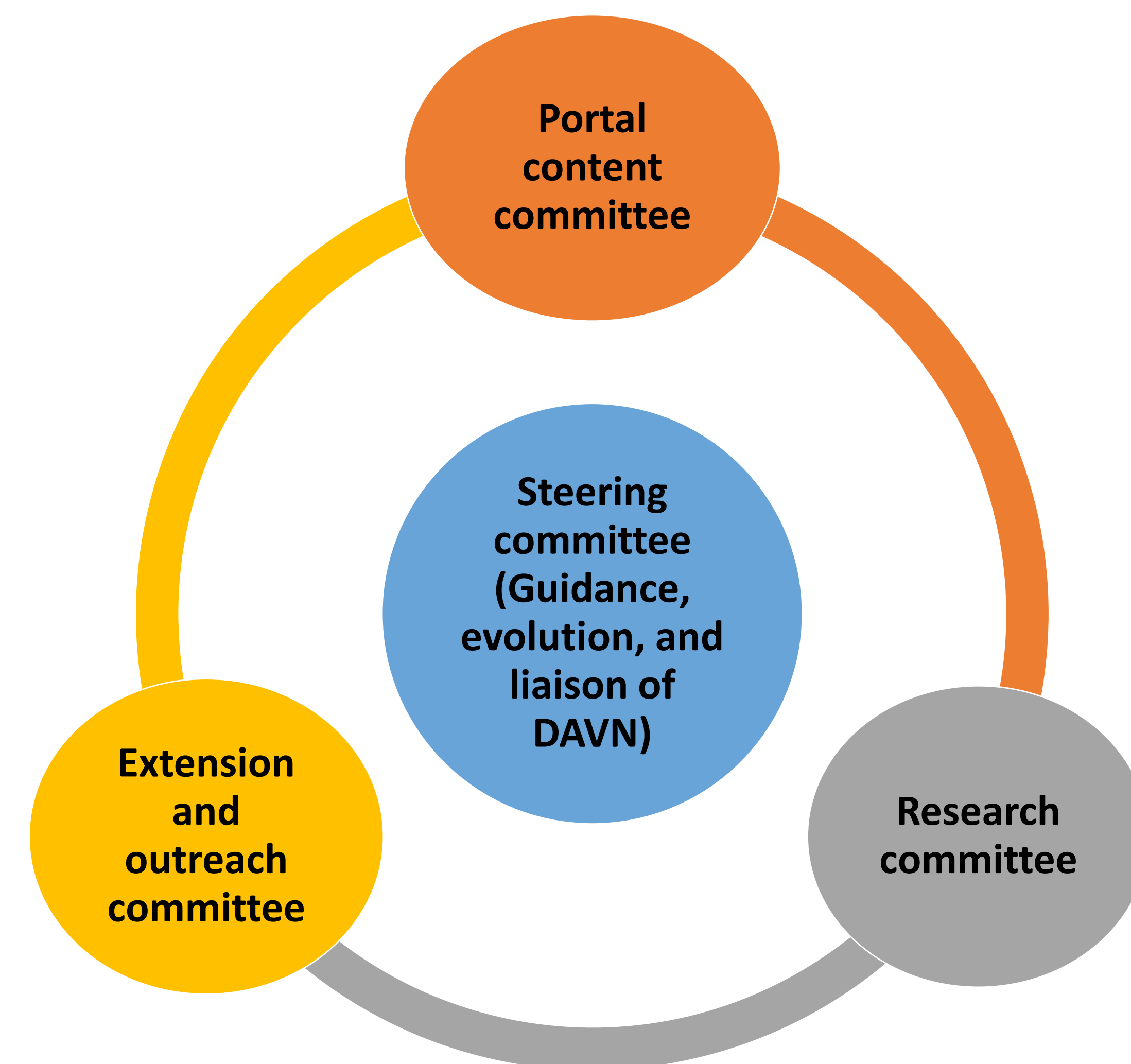
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Diagnostic Assay Validation Network

The Diagnostic Assay Validation Network (DAVN.org) is designed to support assay developers, validators, users, regulators, and professionals across government, industry, and academia to develop and share standard diagnostic method development and validation within the plant pathology community. We are excited to share performance metrics statistical tools, databases and various resources for the plant pathology community.

DAVN Operations

- Portal content committee
- Steering committee (Guidance, evolution, and liaison of DAVN)
- Extension and outreach committee
- Research committee

DAVN Tools

- Statistical calculators
- Assay development and validation
- Databases

- Validation tier overview
- Workflow for assay design based on DAVN terminology
- Key terms for validation assays and validation tier assignments

Statistical calculators

Validation Statistical Calculators

Welcome! The following webpages help assay developers and validators calculate test performance values. This test performance data helps validators communicate test fitness for various applications.

Each webpage contains a description of how and why performance characteristics are calculated, the formulae underlying the calculators, and how to interpret and report the results. You may skip ahead to inputting data at any time.

- Sensitivity - Analytical Sensitivity and LOD
- Precision - Repeatability, Intermediate Precision and Reproducibility
- Accuracy - Diagnostic Sensitivity and Specificity
- Accuracy - ROC Curves and Thresholds

Databases

Nucleic Acid Extraction Database

A comprehensive database compiling a list of Nucleic Acid (NA) extraction methods/techniques used in peer reviewed publications in plant pathogen diagnostic assays since 2011.
The database also includes information on the NA extraction kits, Assay mix kits, and equipment used depending upon the host, matrix and the purpose of the study.

Select the column headers to sort A to Z and/or filter columns by one or more values. Multiple columns can be sorted/filtered at the same time.
The search box is a single term or an AND based search.

Comments or issues, contact us.

View	Taxon	Year of Publication	Pathogen	Purpose	Host(s)	Sample Matrix (-ces)	Assay Method(s)*
View	Bacteria	2021	Rathayibacter toxicus	Surveillance	Poaceae	Grass	RPA
View	Bacteria	2020	Xanthomonas gardneri	Screening	Tomato	Leaf	LAMP
View	Bacteria	2020	Xanthomonas gardneri	Screening	Pepper	Leaf	LAMP

Nucleic Acid Extraction Database

Taxon	Bacteria
Year of Publication	2021
Pathogen	Rathayibacter toxicus
Pathogen USDA Regulated	Y
Purpose	Surveillance
Host(s)	Poaceae
Sample Matrix (-ces)	Grass
Assay Method(s)*	RPA
Nucleic Acid	DNA
Nucleic Acid Extraction Method	DNeasy Blood & Tissue Kit (Qiagen)
Assay Mix	RPA - TwistDx nfo kit (TwistDx Limited, Maidenhead SL6 4XE, UK); PCR - GoTaq Green Master Mix (Promega, Madison, WI)
Other Kits Used	Plant Material Lysis Kits (OptiGene, West Sussex, UK) - from plant samples
Equipment Used	PCR - PTC-200 Peltier thermal cycler and DNA Engine (Bio-Rad, Hercules, CA, USA); RPA - Heat block
DOI	https://doi.org/10.3390/biology10070620

Bacteria Controls Database

Select the column headers to sort A to Z and/or filter columns by one or more values. Multiple columns can be sorted/filtered at the same time.
The search box is a single term or an AND based search.

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View	Taxon	DAVN Control	Control Type	Control Target Region
View	Bacteria	Positive Extraction Control (PEC)	Infected plant extract	hrpB gene
View	Bacteria	Positive Amplification Control (PAC)	X.gardneri culture extract	hrpB gene
View	Bacteria	Negative Extraction Control (NEC)	Healthy plant extract	hrpB gene
View	Bacteria	Negative Amplification Control (NAC)	Non template (water)	hrpB gene

Bacteria Controls Database

Taxon	Bacteria
DAVN Control	Positive Extraction Control (PEC)
Control Type	Infected plant extract
Control Target Region	hrpB gene
Specificity Level	Species
Pathogen	Xanthomonas gardneri
Host(s)	Tomato Pepper
Pathogen Target	hrpB gene
Assay Method	LAMP
DOI	https://doi.org/10.3390/microorganisms8091301
Related Pub	

Knowledge center

The knowledge center houses webinars, seminars, presentations and posters, and archived materials from network development

Webinar Topic	Broadcast date
Advances on CRISPR-based pathogen detection	April 29, 2024
Isothermal Diagnostics for Critical Plant Pathogens: Design, Development, and Implementation	March 14, 2024
Methods and Tools for Plant Pathogen Immunoassay Design, Development, and Analysis	February 6, 2024
Sequence-Based Diagnostic Technology	January 24, 2024
Using RCA for Detecting and Studying Diseases: Examples for Plant DNA Viruses	December 6, 2023

Volunteers Needed

Join the DAVN online community to find fellow population and pathogen researchers, scientists to ring-test, deploy new assays, general support and discussion of diagnostic assay development and validation.

Follow DAVN

Webpage – DAVN.org
DAVN updates - https://forms.scisoc.org/davn-info/
DAVN mailbox - DAVN@scisoc.com
First focus issue (published in PhytoFrontiers, 2023)
https://apsjournals.apsnet.org/doi/epdf/10.1094/PHYTOFR-3-1

PhytoFrontiers Focus issue – Accepting submissions through Sep 30th, 2024

Call for Papers! Publish in the Second DAVN Focus Issue
Diagnostic Assay Development and Validation: The Science of Getting it Right II

Diagnostic Assay Development and Validation: The Science of Getting It Right II
A *PhytoFrontiers* Focus Issue

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