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Development of an Empirically-Based Test Algorithm for Systemic Rheumatic Diseases

The Mayo Clinic Connective Tissue Disease Cascade

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IMPROVING PATIENT CARE THROUGH ESOTERIC LABORATORY TESTING

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Optimized Laboratory Testing for Connective Tissue Diseases in Primary Care: The Mayo Connective Tissue Diseases Cascade

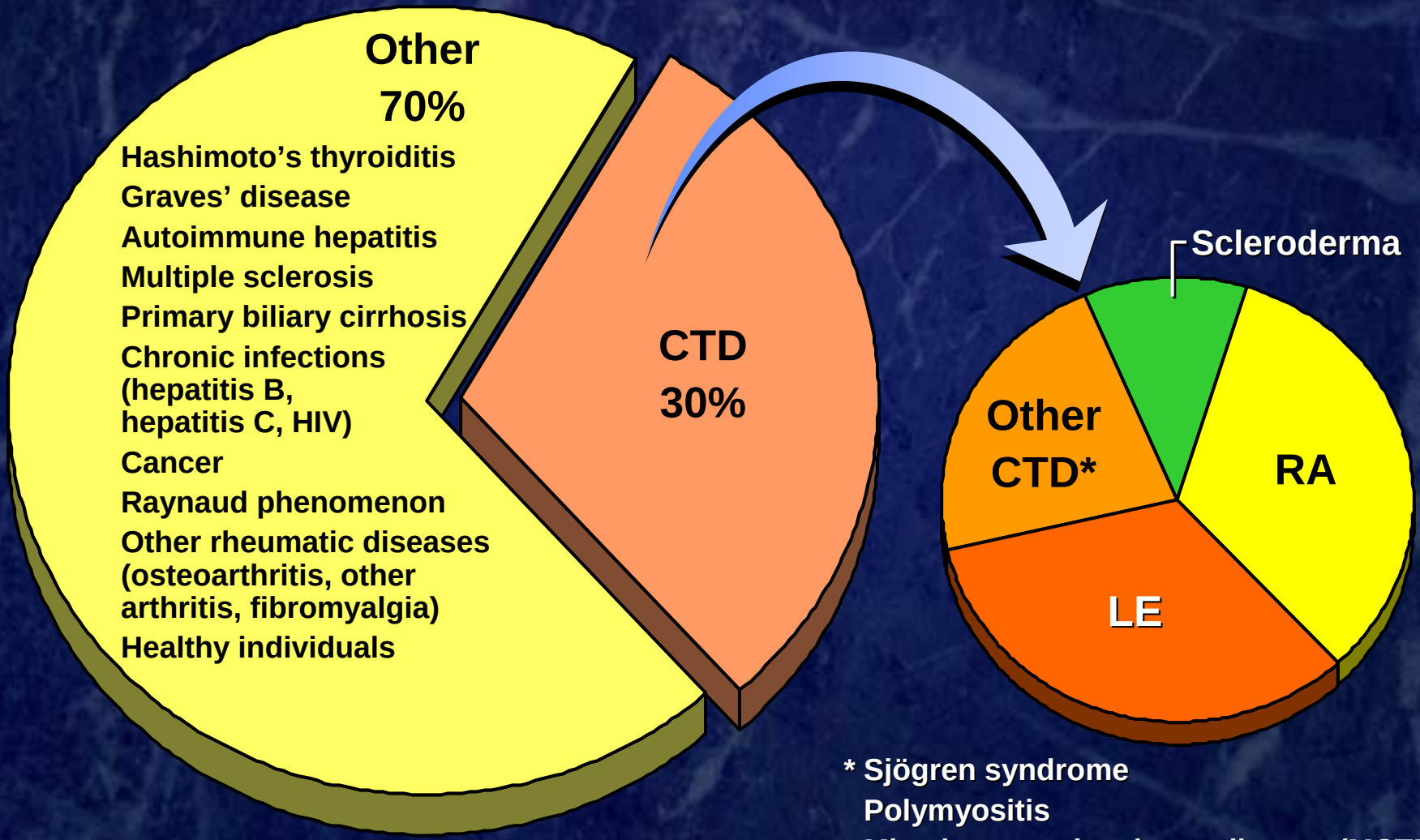
Autoimmunity is common in the general population, but systemic autoimmune diseases, including the so-called connective tissue diseases, are relatively rare. Many patients show some serologic evidence of autoimmunity, but few have the constellation of characteristic signs and symptoms and disease-specific autoantibodies required to establish the diagnosis of a connective tissue disease (Figure 1, see page 2). These statements describe the challenging environment in which primary care physicians must evaluate and treat patients suspected of having a connective tissue disease.

Signs and symptoms of systemic inflammation including fatigue, arthralgias, fever and weight loss are common manifestations of autoimmunity, and occur in connective tissue diseases. This group of diseases includes rheumatoid arthritis, lupus erythematosus (LE), scleroderma, Sjögren syndrome, polymyositis and

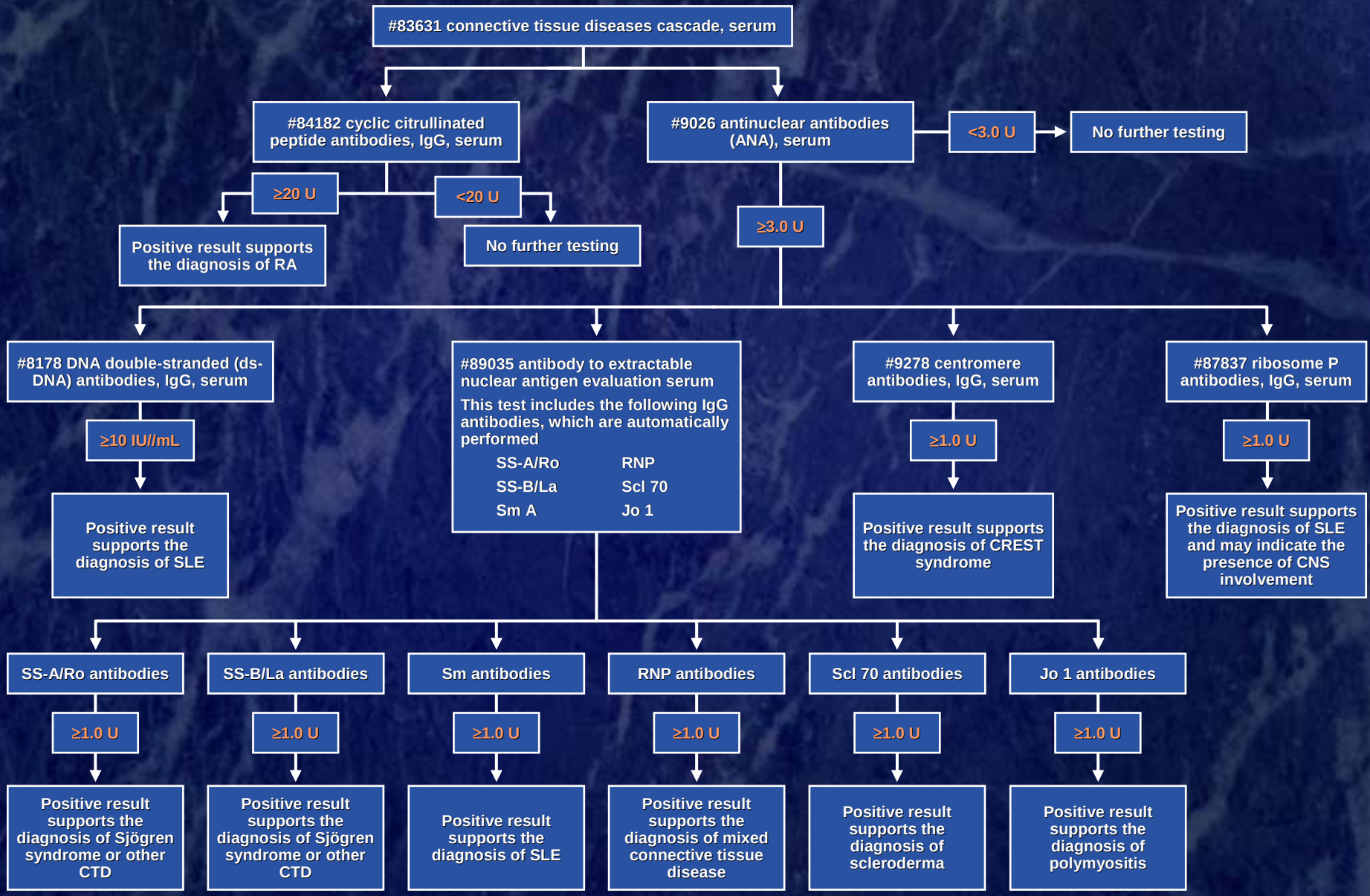
including renal failure, irreversible pulmonary fibrosis, and even cardiac or central nervous system disease. Optimum medical management of patients with connective tissue diseases requires early and accurate diagnosis. Overdiagnosis can result in inappropriate treatment with potentially dangerous medications and unnecessary referrals to specialist physicians; whereas failure to diagnose a connective tissue disease can lead to a delay in instituting appropriate treatment and development of serious complications.

Laboratory testing is important in the diagnosis of connective tissue diseases and relies on the detection of autoantibodies. Certain autoantibody tests such as the test for antinuclear antibodies (ANA) are quite sensitive for disease diagnosis, while other tests detect autoantibodies that are less sensitive for diagnosis but have high specificity for a particular connective

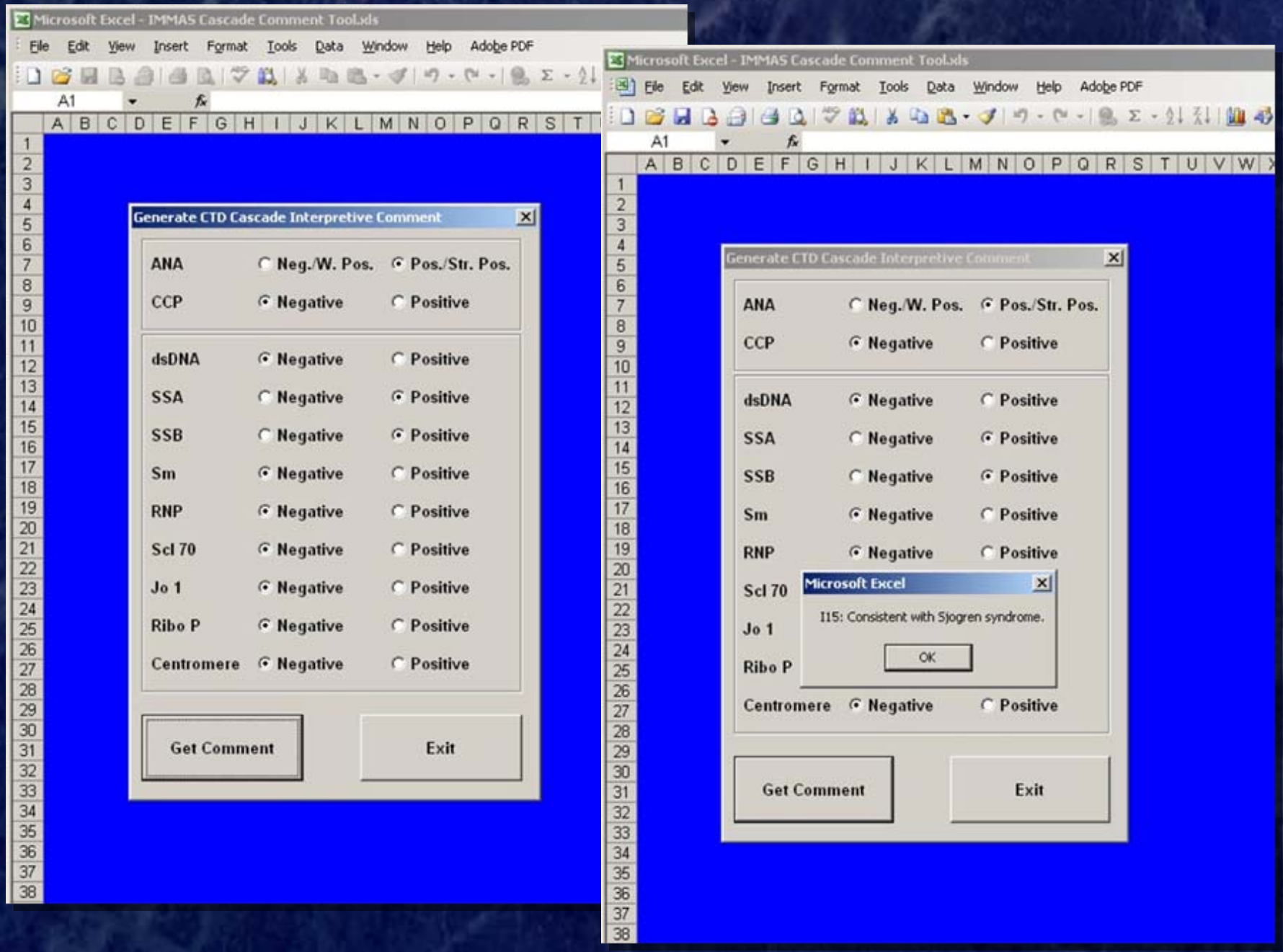
Relative Distribution of Disease States for Positive ANA Tests



Connective Tissue Diseases Cascade Test-Ordering Algorithm



CNS: central nervous sytem; CREST: calcinosis, Raynaud's disease, esophageal motility disorder, sclerodactyly and telanglectasia; CTD: connective tissue disease; SLE: systemic lupus erythematosus


Microsoft Excel - IMMAS Cascade Comment Tool.xls
File Edit View Insert Format Tools Data Window Help Adobe PDF
A1
Generate CTD Cascade Interpretive Comment
ANA Neg./W. Pos. Pos./Str. Pos.
CCP Negative Positive
dsDNA Negative Positive
SSA Negative Positive
SSB Negative Positive
Sm Negative Positive
RNP Negative Positive
Scl 70 Negative Positive
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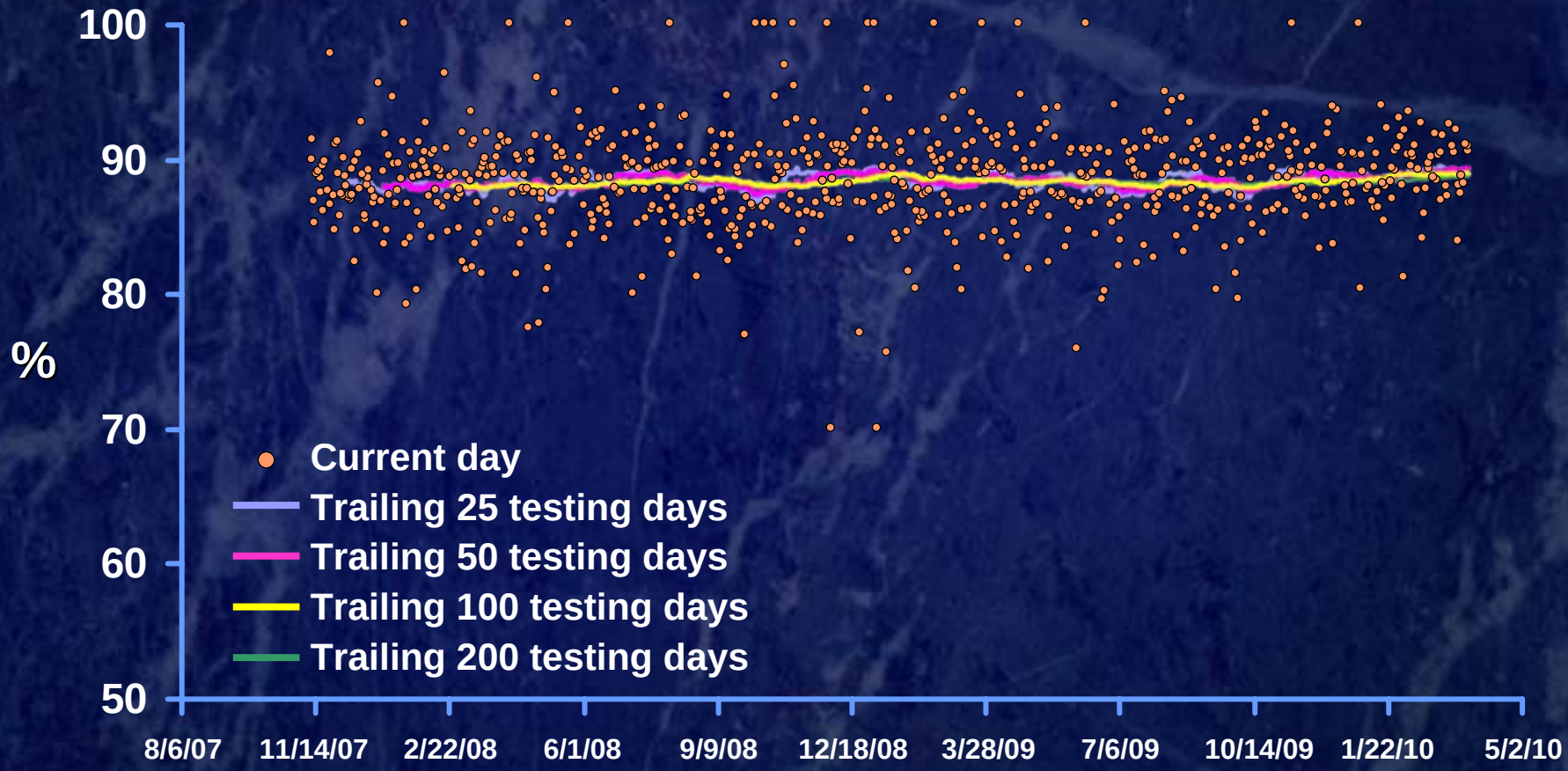
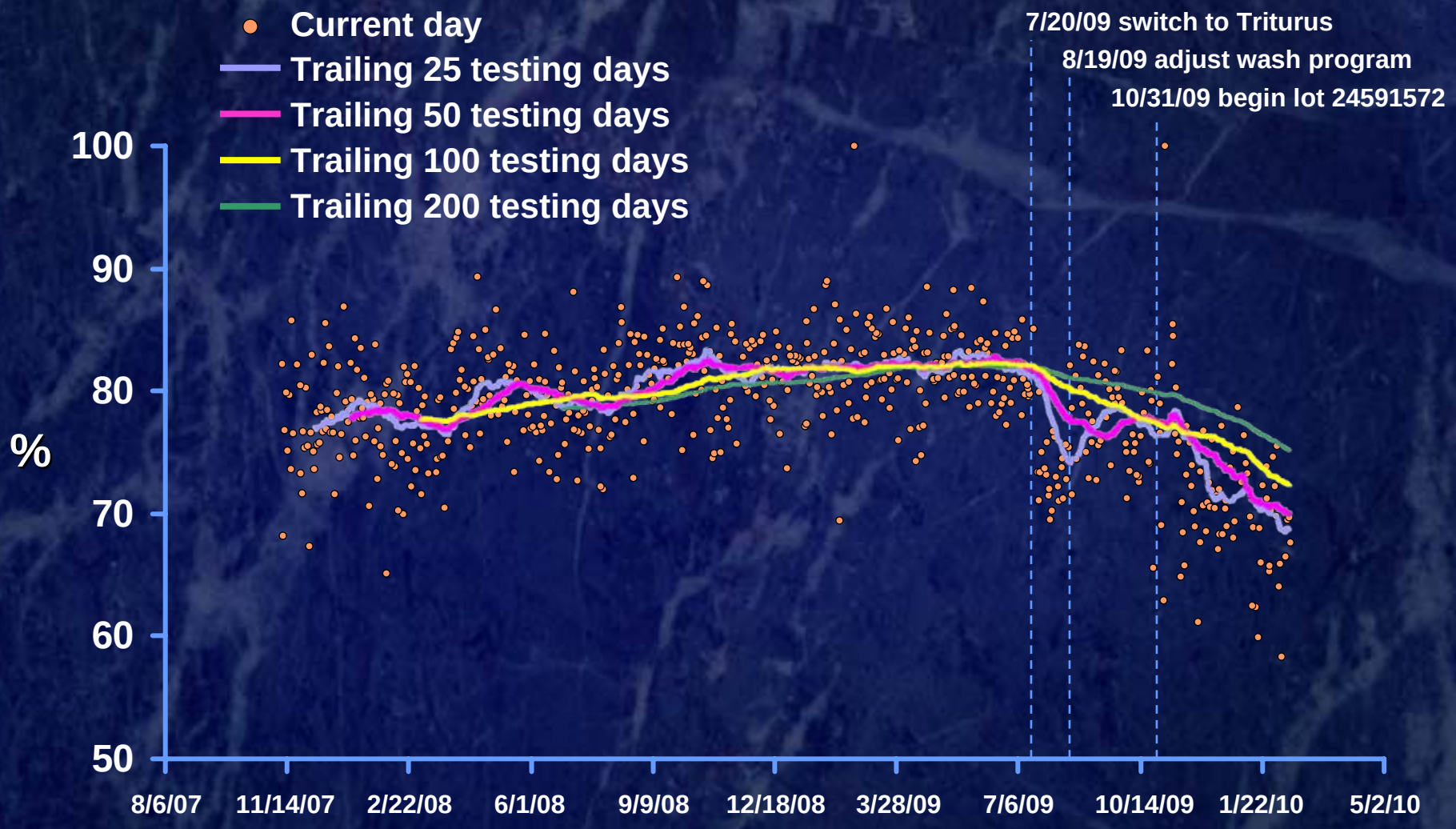
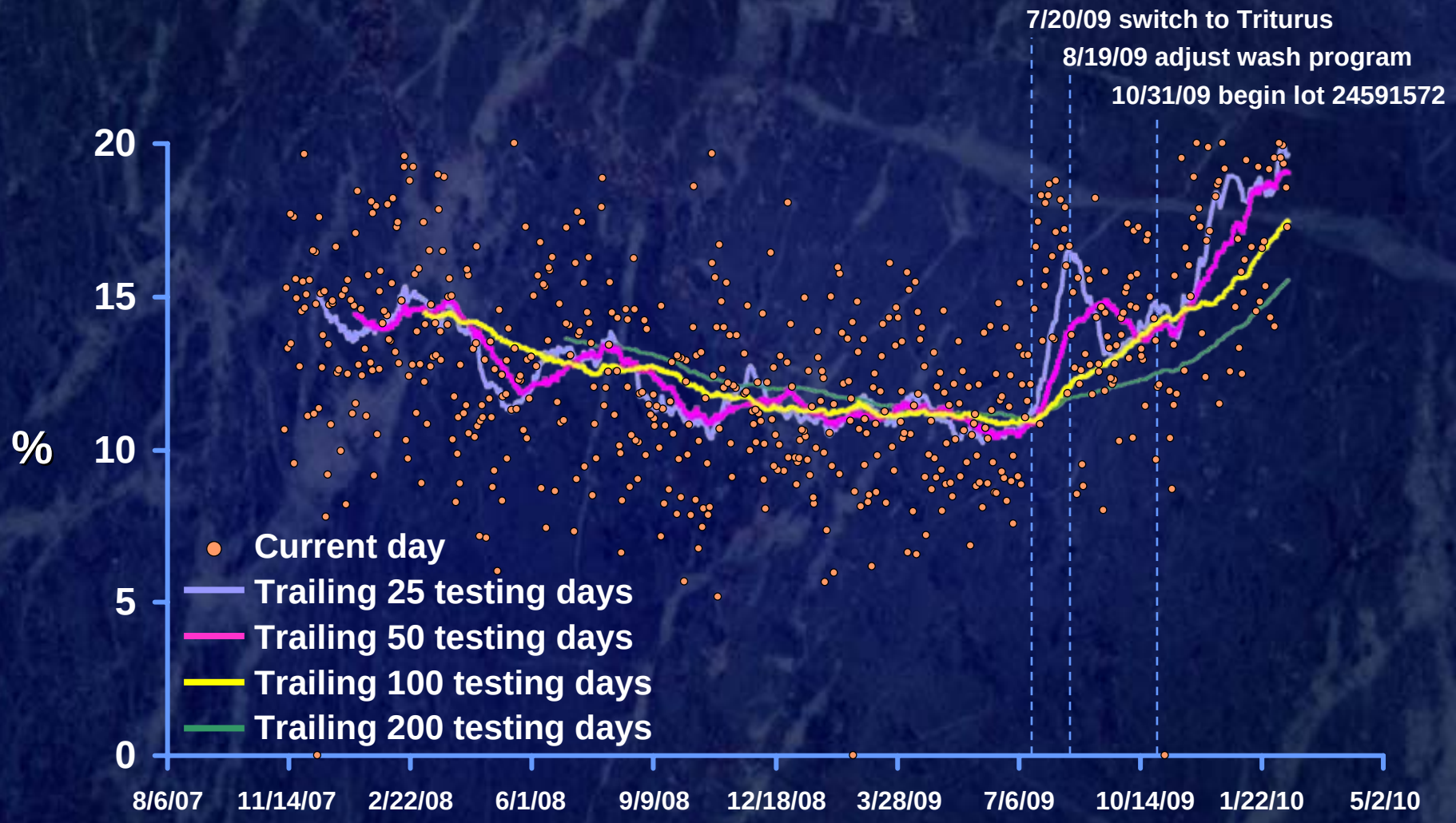
Negative Rates – Trailing Averages



Negative Rates – Trailing Averages



Weak Positive Rates – Trailing Averages



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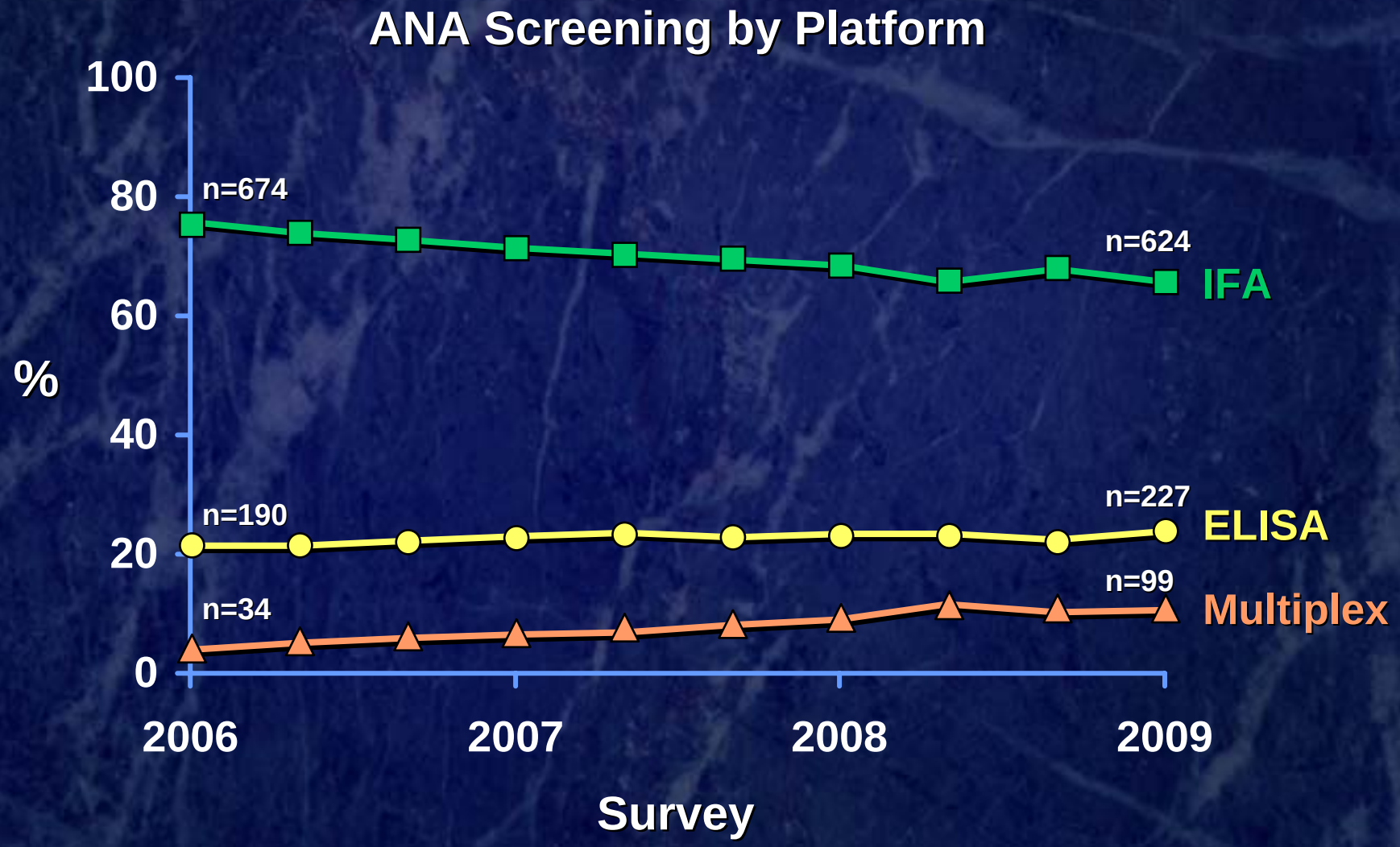
Trends in ANA Proficiency Testing Methods
2006-2009



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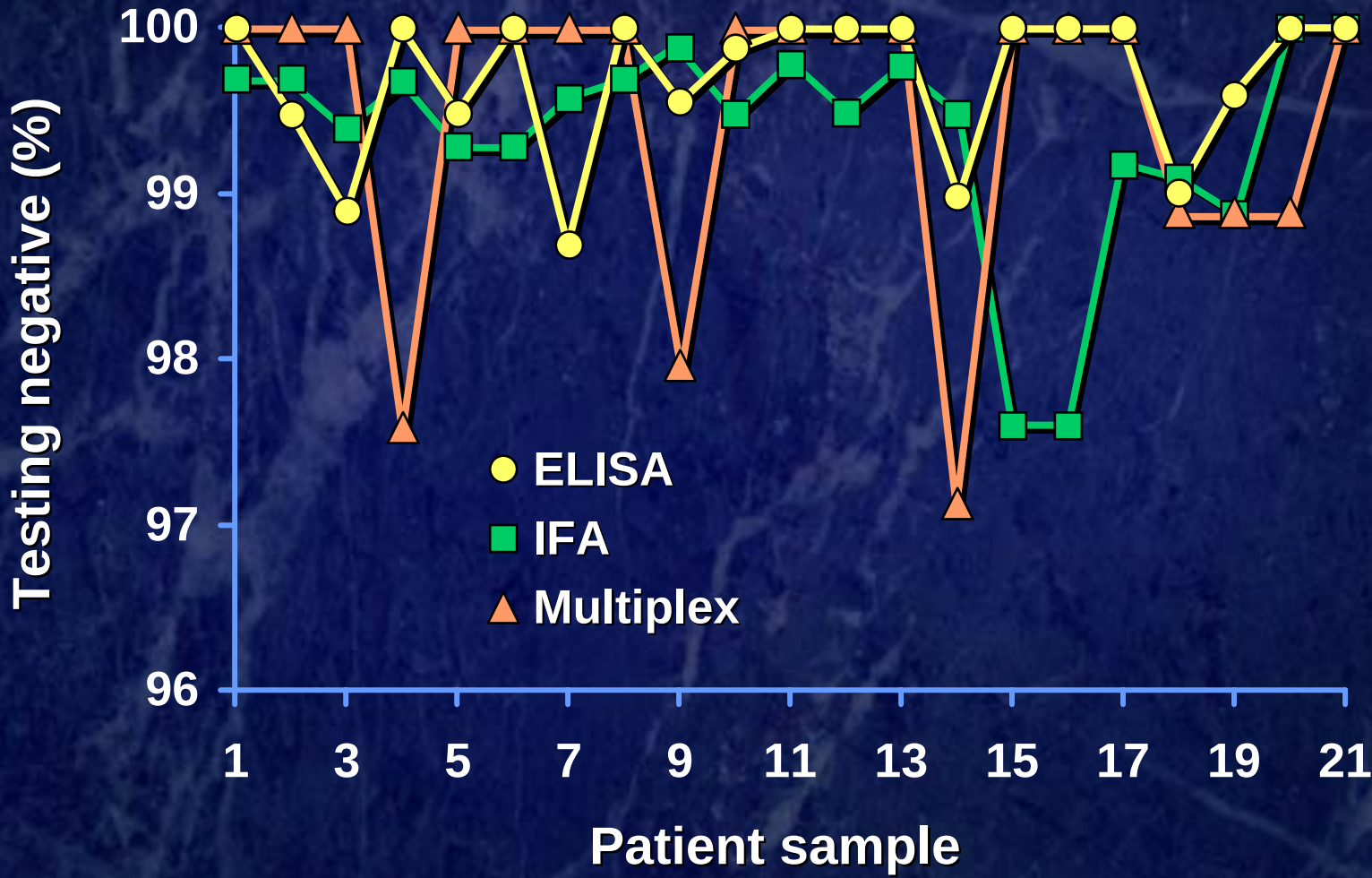
Sample Characteristics of Positive ANA Patient Samples that had Detection Rates <75% by MIA

Survey	Pt no.	Agreement rate (%)	IFA titer	Laboratory-reported IFA pattern
2006 B	ANA 7	40	120-320	Homogeneous diffuse
2006 C	ANA 12	11	64-80	Homogeneous diffuse (70)/ speckled (30)
2006 C	ANA 15	72	128-320	Homogeneous diffuse
2008 A	ANA 3	1	320-640	Nucleolar
2009 A	ANA 5	2	128-640	Nucleolar

Summary of Performance of Each Method on ANA Negative Patient Samples

2006-2009



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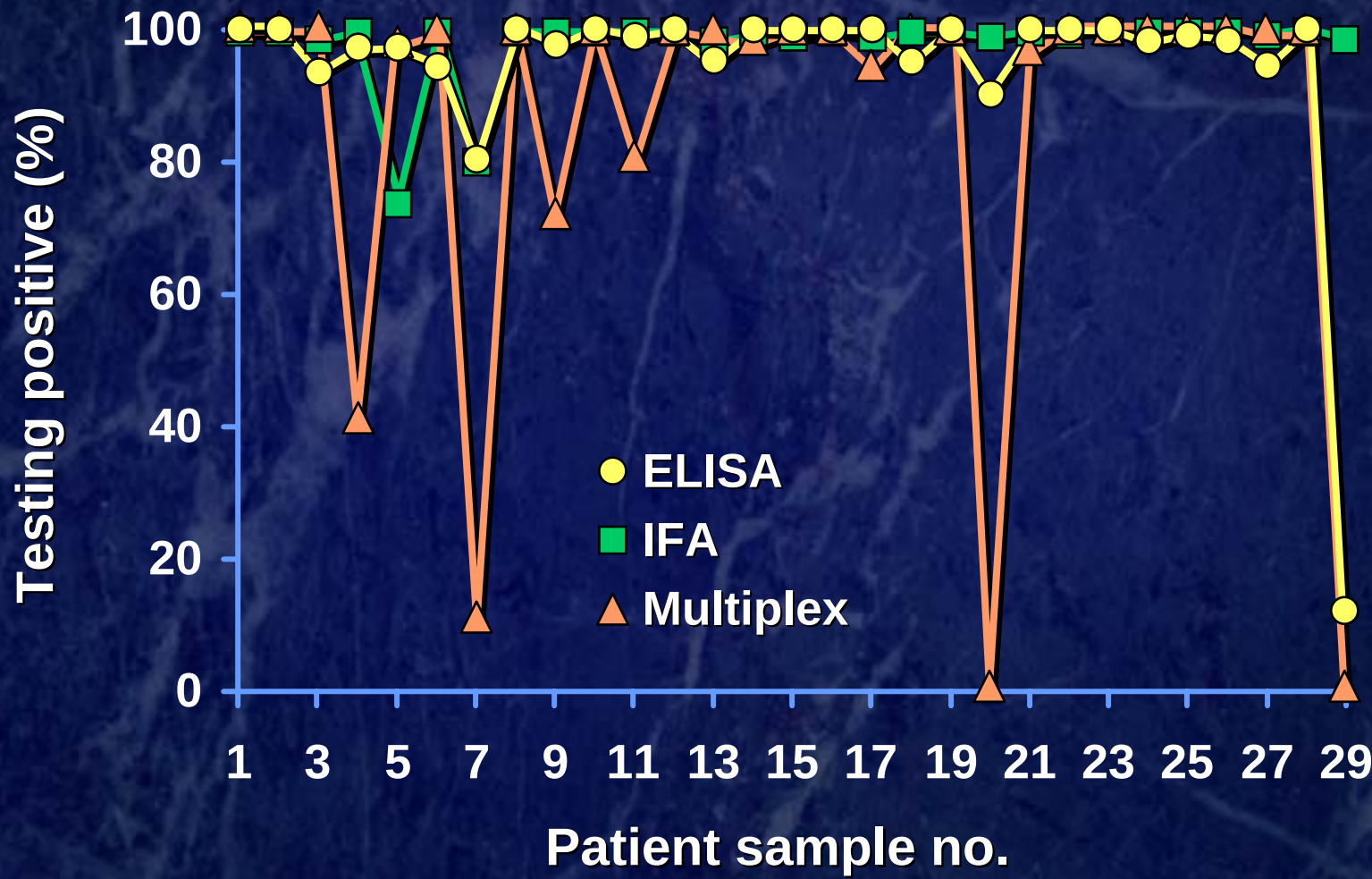
Summary of Performance of Each Method on ANA Positive Patient Samples

2006-2009



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