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Toward Practical Chlamydial Serology for Clinical Use

■ Researcher Information

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■**Expertise:** Rickettsial and chlamydial infections
■**Achievements:** Development of diagnostic methods

■ Research Idea / Technology Seeds

Clinical Implementation Through Standardized and Automated Serology

■ **Technical Expertise**
・Experience in serological testing using clinical specimens
・Established micro-IF assay using chlamydial elementary bodies
・Accumulated serum panels for quality control
・Collaborative network with clinical and diagnostic laboratories
”Clinical infrastructure for serological evaluation and testing”

■ **Development Concept**
・Standardized and automated antigen plate production
・AI-assisted digital interpretation and reduced operator dependency
・Expandable to ELISA and other assay platforms based on micro-IF technology
” Highly reproducible serological testing systems ”

■ **Objectives**
・Move beyond skill-dependent micro-IF testing
・Establish reproducible assay systems adaptable to diagnostic reagents
” Practical serology for clinical use ”

■ **Proposal for Collaboration**
・Collaborative development of standardized and automated serological diagnostics

■ Background and Challenges to be Addressed

■ **Clinical Importance**
・*Chalmydophila pneumoniae*: a common cause of community-acquired pneumonia; assessment of past and recurrent infection is important
・*Chalmydophila psittaci*: a bird-associated zoonosis linked to outbreaks and severe pneumonia
“Both are clinically important respiratory infections”

■ **Current Limitations in Clinical Practice**
・Difficult to differentiate based on symptoms or imaging alone
・PCR is mainly useful during the acute phase
・Serology is important, but interpretation remains complex

■ **Current Limitations in Diagnostic Systems**
・Micro-IF is the established gold standard, but:
・Interpretation requires specialized expertise
・Inter-laboratory variability can occur

High diagnostic accuracy, but limited standardization and consistency

■ Research Overview

■ Skill-dependent micro-IF→ Standardization and AI-assisted automation→ Reduced operator dependency→ Diagnostic reagent development for clinical use

■ Future Plans

■ Standardization of assay conditions, including antigens and interpretation criteria
■ Multi-center evaluation using clinical specimens
■ Development toward diagnostic reagent applications