OHIO STATE UNIVERSITY

Monoclonal Antibodies for Rapid Diagnosis of Summer Patch and Necrotic Ring Spot Diseases of Turfgrasses

1990 Research Grant: $10,500
(Third year of support)

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Slow-growing patch diseases are among the most difficult problems to diagnose on turfgrasses. Research at the Ohio State University, Department of Plant Pathology has focused on the development and use of immunological techniques for rapid diagnosis. We previously reported our success in developing a monoclonal antibody-producing clone that was selective for *Leptosphaeria korrae*, the causal agent of necrotic ring spot. The antibody, a small protein that can bind to the fungus, can now be grown in great quantity in a laboratory flask. The antibody allows us to test for the presence of the pathogen in a plant sample. Our antibody was highly reactive against all fungal strains of *Leptosphaeria korrae* tested.

The usefulness of the antibody for *L. korrae* has been tested thoroughly against diseased turfgrass samples submitted to the Ohio State University Plant and Pest Diagnostic Clinic and additional Kentucky bluegrass samples collected by our laboratory. The *L. korrae* pathogen was successfully isolated from all Kentucky bluegrass samples exhibiting a significant reaction with the LK antibody. In addition, the LK antibody was successfully used to study the distribution of *L. korrae* in the various regions of "frog eye" patches and on turfgrass plant parts to gain a better understanding of the life cycle of this disease. Through this research effort, sampling techniques for detection of *L. korrae* with the LK antibody were optimized.

The LK antibody successfully detected *Leptosphaeria korrae* in certain bermudagrass sites with spring dead spot symptoms. The antibody will be useful in determining the causal agent of spring dead spot. Currently, at least three fungi (*L. korrae, Ophiosphaerella herpotricha*, and *Gaeumannomyces graminis*) have been shown to be causes of this disease.

Development of monoclonal antibody against the causal fungus of summer patch (*Magnaporthe poae*) is in progress. A third set of mice have been immunized using an improved protocol. Reactivity of mouse serum will be tested in November 1990, followed by production of monoclonal antibody clones. Screening of clones will begin in mid-December, followed by field testing in the summer of 1991. The result will be a fast, reliable method to diagnose and monitor this disease.