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(71) Applicant: **PIONEER HI-BRED INTERNATIONAL, INC.** [US/US]; 7100 NW 62ND AVE, PO BOX 1014, Johnston, Iowa 50131-1014 (US).

(72) Inventors: **BIRO, Ronald L.**; 7250 NW 62nd Avenue, PO Box 552, Johnston, Iowa 50131-0552 (US). **HUNT, Beau**; 1010 NE 5th Street, Ankeny, Iowa 50021-2065 (US).

(74) Agent: **STIMSON, Michael J.**; 7250 NW 62ND AVE, PO BOX 552, Johnston, Iowa 50131-0552 (US).

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(54) Title: LIGHT-MEDIATED POLYMERASE CHAIN REACTION AMPLIFICATION AND PRODUCT DETECTION SYSTEM AND METHODS OF USE

(57) Abstract: A PCR amplification and product detection system is disclosed. The system utilizes a uniform and direct photonic heating subsystem to mediate reaction-by-reaction, high-throughput PCR amplification detectable by a fluorescence detection subsystem. Reaction-by-reaction temperature monitoring for dynamic feedback heat regulation is also disclosed. Also disclosed are methods for using the same.