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We hypothesized that rates of molecular testing would be lower for patients calling a community HelpLine and that we could potentially increase testing rates with one-on-one caller education and providing free precision medicine services.

METHODS
Recruitment to the LungMATCH molecular testing program began November 10, 2016. Patients are recruited through conversations on the LCA HelpLine, then entered into the Perthera program to proceed with molecular profiling, and collection of patient treatment history followed by integration into a computational framework to make treatment recommendations.

The program includes tissue acquisition, multi-omic molecular profiling, and collection of patient treatment history followed by integration into a computational pipeline with extensive drug and clinical trial databases to provide ranked therapeutic options matched to the patient. An every-patient, real-time medical review board then oversees and approves the PRs. It is returned to both participating physicians and patients.

RESULTS
As of September 14, 2018, 24 patients have completed the Perthera program and received a Perthera Report. A number of barriers to informed consent and biopsy being identified. Workflows are being continually adjusted and process improvements have included additional communication, lung-cancer specific patient coordinator, more comprehensive information about cost, and revised language explaining the process to physicians.

The program collects data longitudinally on treatment decisions, patient outcomes including progression-free and overall survival, and patient experience.

BACKGROUND
For metastatic non-small cell lung cancer (NSCLC), guidelines include molecular testing for actionable biomarkers and recommend broad profile testing. Yet previous studies indicate that not all patients with NSCLC are receiving testing, even for actionable mutations in EGFR, ALK, ROS, and BRAF.

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TESTING RESULTS
By next generation sequencing and IHC/ISH, 19/24 patients (79%) had at least one moderately or highly actionable genetic alteration including standard of care, off-label, and clinical trial options.

CONCLUSIONS
There is broad patient interest in accessing precision medicine information but still many barriers to widespread adoption. The LungMATCH program provides a turn-key solution to help provide a feasible means to "democratize" access to precision molecular information unbound by geography or community/academic setting. Importantly, the majority of patients who received a completed profiling report had actionable molecular alterations, which underscores the potential impact of testing. Treatment decisions and patient outcomes continue to be followed.

Importantly, the program demonstrated that the majority of patients who received the Perthera Report (79%) had actionable molecular alterations, which underscores the critical importance of multi-omic testing for treatment decision making.

FUTURE DIRECTIONS
The program continues to enroll with ongoing improvements in:
- Patient educational information at time of referral and additional patient follow-up calls
- Working with community oncology practices/health systems to facilitate patient enrollment
- Update to all patients with lung cancer an opportunity for precision therapy matching based on multi-omic testing, treatment history and drug target regardless of where they receive their care. Future research efforts will include updated analyses of multi-omic testing, treatment history and drug target regardless of where they receive their care. Future research efforts will include updated analyses of molecular alterations as well as clinical and health outcomes of those who have received Perthera Reports.

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