# Current status

PK/PD Scientist,

Cognigen Corporation, a SimulationPlus Company,

1780 Wehrle Drive, Suite 110, Buffalo, NY 14221-7000

# Skills

* Expert in PK/PD modeling, simulation and extrapolation of preclinical and clinical data
* Dealt in depth with applying PK/PD principles to design, analyze, and critically interpret preclinical and clinical (pediatric and adult) studies
* Broad experience in development and application of mechanism or physiologically based pharmacokinetic models
* Thorough understanding of ontogeny and developmental factors affecting drug pharmacokinetic in infant and pediatric population
* Application of model based drug development in preclinical and clinical studies
* Strong verbal and written communication skills

# Software skills

NONMEM - Advanced user

ADAPT - Advanced user

Phoenix WinNonlin - Advanced user

R - Advanced user

SPSS - Intermediate user

Simcyp - Beginner user

Watson LIMS - Advanced user

GastroPlus - Intermediate user

Trial Simulator - Beginner user

# Research experience

## PK/PD Scientist Jul 2016 - Current

## Cognigen Corporation, Buffalo, NY

* Perform population analysis to characterize sources of pharmacokinetic pharmacodynamic variability in clinical and preclinical studies
* Use physiologically based pharmacokinetic model to help drug development in various preclinical and clinical phases and extrapolate results from preclinical to clinical study

## PK/PD Modeling and Simulation Postdoctoral Fellow Feb 2013 - Jul 2016

## St. Jude Children’s Research Hospital, Memphis, TN

* Extensively participated with collaborative research groups (including clinicians, tumor biologist, chemist and more) as a pharmacokinetic modeler to screen molecules through PK guided drug development pipeline for various childhood brain tumors
* Interpreted preclinical PK and PD data and translated findings for clinical application
* Applied PK/PD modeling and simulation principles in design, interpretation and extrapolation of preclinical studies to identify promising leads at early drug development stage
* Used *in silico* model correlating compound’s physicochemical properties with its brain penetration to prioritize molecules for preclinical brain tumor drug pipeline
* Performed population PK modeling of clinical data to describe disposition of anticancer drugs in infants and pediatric population and to explore effect of covariates
* Developed whole body PBPK model with individualized tumor compartment as an input to a CompuCell3D (CC3D) model to characterize intratumoral heterogeneity in drug perfusion and PD

## Ph.D. Candidate Sep 2006 - Dec 2012

## Long Island University, Brooklyn, NY

* Developed a PBPK-PD model to characterize baseline uric acid excretion and uricosuric effect in IPRK using non-linear mixed effect modeling (NONMEM)
* Characterized uric acid excretion in Isolated Perfused Rat Kidney (IPRK)
* Evaluated effect of varying albumin levels on renal excretion of highly plasma bound drug (benzbromarone) using IPRK
* Designed and executed protein binding experiments, and performed model based data analysis to find binding parameters

## Research Fellow - Long Island University

## Onconova Therapeutics Jan 2010 - Feb 2011

* Developed a DMPK model for preclinical data of Ex-RAD (ON-01210.Na, a radio protective compound) using WinNonlin
* Performed non-compartmental pharmacokinetic analysis of phase I study data of ESTYBON (ON-01910.Na, an anticancer compound)
* Assisted in drug disposition and metabolism study of various new drug molecules using Isolated perfused rat liver (IPRL)
* Aided in development of oral formulation of ESTYBON by performing IVIVC using GastroPlus

## Brooklyn Hospital Feb 2009 - Jul 2009

* Assisted with an open-label dose determining pilot study to characterize pharmacokinetic of trimethoprim/sulfmethoxazole in thrice-weekly hemodialysis patients
* Performed compartmental and non-compartmental pharmacokinetic analysis of data
* Developed a validated HPLC method for simultaneous quantification of Trimethoprim and Sulfmethoxazole in human plasma, urine and dialysate
* Routinely processed and analyzed human plasma and urine samples

## Other Projects

* Developed a validated HPLC and LCMS methods for quantification of various small molecules in various matrices

## Research Associate - Quality Assurance *Apr 2006 - Jul 2006*

## Veeda Clinical Research, India

* Implemented and ensured the compliance with GCP, GLP and other regulatory guidelines in conduct of clinical studies
* Assisted during various regulatory audits such as USFDA, ENVISA, EMEA and more
* Conducted in-process audit of clinical and bioanalytical phases of clinical studies
* Retrospectively audited clinical reports, bioanalytical method validation reports, bioanalytical study reports and more

## Research Associate - Quality Assurance *Oct 2005 - Apr 2006*

## Accutest Laboratories Ltd., India

* Assisted in building organization structure for effective work flow in newly established BA/BE research facility by participating as a key member for interdepartmental communication
* Prepared and reviewed instrument qualification protocol, instrument qualification reports, and SOPs for Clinical, Bioanalytical and QA department
* Implemented and adhered to GCP regulations and bioanalytical guidelines in conduct of clinical studies

## M.Pharm Candidate May 2004 - Jan 2005

## Sardar Patel University, India

* Formulated and characterized ACYCLOVIR loaded Chitosan, PHB and PHBV microspheres
* Implemented 33 factorial design to facilitate search of significant parameters affecting in vitro drug release
* Performed nonlinear regression and statistical analysis of data using Microsoft Excel

# Education

SEP 2006 - Dec 2012 Ph.D. in Pharmaceutics, Long Island University, USA GPA - 3.91/4.00

JUN 2003 - APR 2005 M.Pharm in Quality Assurance, Sardar Patel University, India GPA - 3.82/4.00\*

SEP 1999 - APR 2003 B.Pharm, Sardar Patel University, India GPA - 3.65/4.00\*

\* Credential Evaluation by WES (World Education Service)

# Peer reveiw

Peer reviewer for following journals

* Molecular Cancer Therapeutics
* Journal of Pediatric Pharmacology & Therapeutics
* Cancer Chemotherapy & Pharmacology
* British Journal of Cancer
* Chinese Journal of Cancer Research
* Biomedical Research International

# Publications

## Manuscripts (Accepted/Published):

* **Patel, Y.T.**#, Daryani, V.M.#, Tagen, M., Turner, D.C., Carcaboso, A.M., Atkinson, J.M., Gajjar, A., Gilbertson, R.J., Wright, K.D., Stewart, C.F. (2016) *“Translational pharmacokinetic-pharmacodynamic modeling and simulation: Optimizing 5-fluorouracil dosing in children with pediatric ependymoma”*, Clinical pharmacology & therapeutics: Pharmacometrics & system pharmacology, Accepted on Feb 2016 (# Authors contributed equally).
* Phoenix, T.N., Patmore, D.M., Boop, S., Boulos, N, Jacus, M.O., **Patel, Y.T.**, Roussel, M.F., Goumnerova, L., Perreault, S., Wadhwa, E., Cho, Y., Stewart, C.F., and Gilbertson, R.J. *“Medulloblastoma genotype dictates blood brain barrier phenotype”*, Cancer Cell, Accepted on Feb 2016.
* **Patel, Y.T.**, Jacus, M.O., Davis, D.D., Boulos, N., Turner, D.C., Vuppala, P.K., Freeman III, B.B., Gilbertson, R.J., Stewart, C.F. (2016) *“Simvastatin hydroxy acid fails to attain sufficient CNS tumor exposure to achieve cytotoxic effect: Result of a preclinical cerebral microdialysis study”,* Drug metabolism & disposition 44-4.
* **Patel, Y.T.**#, Morfouace, M.#, Nimmervoll, B.#, Boulos, N.#, Shelat, A., Freeman, B.B., 3rd, Robinson, G.W., Wright, K., Gajjar, A., Stewart, C.F., et al. (2016) *“Preclinical studies of 5-fluoro-2'-deoxycytidine and tetrahydrouridine in pediatric brain tumors”,* Journal of neuro-oncology 126, 225-234. (# Authors contributed equally)
* Morfouace, M., Cheepala, S., Jackson, S., Fukuda, Y., **Patel, Y.T.**, Fatima, S., Kawauchi, D., Shelat, A.A., Stewart, C.F., Sorrentino, B.P., et al. (2015) *“ABCG2 Transporter Expression Impacts Group 3 Medulloblastoma Response to Chemotherapy”*, Cancer research 75, 3879-3889.
* **Patel, Y.T.**, Jacus, M.O., Boulos, N., Dapper, J.D., Davis, A.D., Vuppala, P.K., Freeman, B.B., 3rd, Mohankumar, K.M., Throm, S.L., Gilbertson, R.J., et al. (2015) *“Preclinical examination of clofarabine in pediatric ependymoma: intratumoral concentrations insufficient to warrant further study”*, Cancer chemotherapy and pharmacology 75, 897-906.
* Jacus, M.O., Throm, S.L., Turner, D.C., **Patel, Y.T.**, Freeman, B.B., 3rd, Morfouace, M., Boulos, N., and Stewart, C.F. (2014) *“Deriving therapies for children with primary CNS tumors using pharmacokinetic modeling and simulation of cerebral microdialysis data”*, European journal of pharmaceutical sciences: official journal of the European Federation for Pharmaceutical Sciences 57, 41-47.

## Review:

* Jacus, M.O., Daryani V.M., Harstead, E.H., **Patel, Y.T.**, Throm, S.L., and Stewart, C.F. (2015) *“Pharmacokinetic properties of anticancer agents for the treatment of CNS tumors: update of the literature”*, Clinical pharmacokinetics. Online on 21st Aug 2015

## Abstracts:

* **Patel, Y.T.**, Jacus, M.O., Shirinifard, A., Davis, A.D., Thiagarajan, S., Throm, S.L., Daryani, V.M., Sablauer, A., Stewart, C.F. *“Development of a whole body physiologically based pharmacokinetic (PBPK) model with individualized tumor compartment for topotecan (TPT) in mice bearing neuroblastoma (NB)”* In: Proceedings of the 106th Annual Meeting of the American Association for Cancer Research; Apr 18th-22nd 2015; Philadelphia.
* Daryani, V.M., Elaine Harstead, K., Owens, T.S., **Patel, Y.T.**, Turner, D.C., Throm, S.L., Panetta, J.C., Gajjar, A., Stewart, C.F. *“Age dependent disposition of cyclophosphamide (CTX) and metabolites in infants ≤ 1 year old with brain tumors”* In: Proceedings of the 106th Annual Meeting of the American Association for Cancer Research; 18th-22nd Apr 2015; Philadelphia.
* Thiagarajan, S., Shirinifard, A., Jacus, M.O., Davis, A.D., **Patel, Y.T.**, Throm, S.L., Daryani, V., Stewart, C.F., Sablauer, A. *“Quantification of tumor blood perfusion of an orthotopic mouse model of neuroblastoma using nonlinear contrast enhanced ultrasound imaging”* In: Proceedings of the 106th Annual Meeting of the American Association for Cancer Research; Apr 18th-22nd 2015; Philadelphia.
* Boulos, N., Dapper, J.D., **Patel, Y.T.**, Wright, K.D., Mohankumar, K.M., Freeman III, B.B., Gajjar, A., Shelat, A., Stewart, C.F., Guy, R., Gilbertson, R.J. *“Developing subgroup specific therapies for ependymoma”*, 16th International Symposium on Pediatric Neuro-Oncology in conjunction with the 8th St. Jude-VIVA Forum, 28th Jun – 2nd Jul 2014, Singapore.
* Boulos, N., Dapper, J.D., **Patel, Y.T.**, DeCuypere, M., Bianski, B., Mohankumar, K.M., Jacus, M.O., Wright, K.D., Gajjar, A., Shelat, A.A., Stewart, C.F., Guy, R.K., Gilbertson, R.J., *“The identification of new therapies for ependymoma subgroups”* 26th EORTC – NCI – AACR Symposium on Molecular Targets and Cancer Therapeutics, 18th–21st Nov 2014; Barcelona, Spain.
* **Patel Y. T.**, Turner, D. C., Jacus M. O., Freeman III, B. B., Haddock, K., Morfouace M., Throm, S. L., Roussel, M. F., Gajjar, A., Stewart, C. F. *“Preclinical Pharmacokinetic and Pharmacodynamic Studies Support the Use of Pemetrexed for Treatment of Pediatric Group 3 Medulloblastoma”* AAPS Annual Meeting, 11th Nov 2013, San Antonio.
* **Patel Y. T.**, Sweeney, K. R., Taft D. R., *“A Physiologically Based Pharmacokinetic-Pharmacodynamic Model to Quantify Uricosuric Activity in the Isolated Perfused Rat Kidney”* ACoP meeting, 12th-15th May 2013, Fort Lauderdale.
* **Patel, Y. T.**, Taft, D. R. *“Uricosuric Effect of Benzbromarone in the Isolated Perfused Rat Kidney Model”* AAPS Annual Meeting, 14th-17th Oct 2012, Chicago.
* **Patel, Y.T.**, Patel, V.A. *“Design, Development & In‐vitro Characterization of PHB & PHBV coated Acyclovir Microspheres”*; TIFAC-CORE in NDDS, 29th-30th Mar 2005, MS University, Baroda, India.

# References

Will be furnished up on request