

# VIRGINIA PASCUAL, MD: a conversation with the editor

Virginia Pascual, MD, and William Clifford Roberts, MD

Virginia Pascual (*Figure 1*) was born in Madrid, Spain, on May 22, 1958, and grew up in Ceuta, Spain. She received her bachelor's degree from Centro de Estudios Universitarios–San Pablo, Madrid, in 1975, and her medical degree from the Universidad Complutense, Madrid, in 1981. She was a resident in pediatrics at Hospital “12 de Octubre,” Universidad Complutense, Madrid, from 1982 to 1986. Her last year of residency was spent doing pediatric gastroenterology. She moved to the USA in 1987 as a postdoctoral fellow in the Department of Microbiology at the University of Texas Southwestern Medical Center (UTSWMC). After completing that fellowship, she became a research assistant professor in the same department and during that period also completed a fellowship in pediatric rheumatology in the Department of Pediatrics at UTSWMC. From 1995 to 2002, Dr. Pascual was assistant professor of pediatrics and microbiology at UTSWMC, and from 1998 to 2004 she was director of the Division of Pediatric Rheumatology at UTSWMC. In 1999, she moved to the Baylor Institute of Immunology Research (BIIR) as assistant investigator; in 2004, she became associate investigator and in 2006 a full investigator at BIIR.

Dr. Pascual's research endeavors have focused mainly on systemic lupus erythematosus and juvenile arthritis. She has received a number of grants, mainly from the National Institutes of Health (NIH), to support her investigations. She has been very productive in her research. Her curriculum vitae lists 53 publications in peer-reviewed medical journals plus 31 chapters and reviews in either books or medical journals. During the last 4 years, she has lectured around the world at a number of prominent meetings. She is also a very nice woman. It was a pleasure to have the opportunity to talk to her for 2½ hours. She is a real credit to Baylor University Medical Center (BUMC).

**William Clifford Roberts, MD (hereafter, Roberts):** *Dr. Pascual, I appreciate your willingness to talk to me and therefore to the readers of BUMC Proceedings. To start, could you discuss your*



**Figure 1.** Dr. Virginia Pascual during the interview.

*early life, some of your early memories, your parents, your siblings, and your environs?*

**Virginia Pascual, MD (hereafter, Pascual):** I was born in Madrid, Spain, but grew up in Ceuta, Spain (*Figure 2*), located in the very north of Morocco, 17 kilometers across the ocean from Tarifa, which is in the south of Spain. Ceuta is a Spanish colony. The city has belonged to Spain since the 15th century, and before that it belonged to Portugal. It has never been part of Morocco. Ceuta is 21 square kilometers in size, it is surrounded by ocean, and its climate is mild.

**Roberts:** *What is the area that is owned by Spain called?*

**Pascual:** Today it is an autonomous city. In Spanish it is *Ciudad Autónoma*. It has its own local government, and Spanish is the official language. Most of the population is Spanish.

**Roberts:** *How large a city was Ceuta when you were living there?*

**Pascual:** Around 65,000 people.

**Roberts:** *What supports the city?*

**Pascual:** It started off as a military fort; strategically, it is very well positioned because it is at the entrance into the Mediterranean Sea (*Figure 3*). Because Spain lost Gibraltar to the United Kingdom—and Gibraltar held a similar position at the opening of the Mediterranean Sea—Spain had a special interest in keeping Ceuta, which is a very crowded port. Military and commerce are strong in Ceuta. As a duty-free port, it attracts many visitors.



**Figure 2.** On the phone at age 5.



**Figure 3.** Location of Ceuta, south of mainland Spain.

From the Baylor Institute for Immunology Research (Pascual) and the Baylor Heart and Vascular Institute (Roberts), Baylor University Medical Center, Dallas, Texas.

**Corresponding author:** Virginia Pascual, MD, Baylor Institute for Immunology Research, 3434 Live Oak Street, Dallas, Texas 75204 (e-mail: virginip@BaylorHealth.edu).



**Figure 4.** At age 15 (on the right), with her family.

**Roberts:** *Did your parents move to Ceuta soon after you were born?*

**Pascual:** No, they were already living there. My father's family had been living there for many years because my grandfather worked for the Spanish army, which owned the colony. My father went to school in Ceuta but then moved to Madrid to pursue his studies. He later studied law but never worked as a lawyer. He worked for the government customs office, becoming chief of customs. He obviously knew a lot about commerce. My mother met him in Madrid when he was a student. My mother's family comes from Santander, in the very north of Spain. Santander, Madrid, and Ceuta form almost a straight line.

**Roberts:** *Do you have siblings?*

**Pascual:** Yes. I have two sisters and a younger brother, who is 14 years younger than I am (*Figure 4*).

**Roberts:** *What are your sisters' names?*

**Pascual:** My oldest sister, Pilar, was born in 1957 and died in 2004. I was born in 1958, and my younger sister, Lourdes, in 1959. She lives in Madrid and is a homemaker. My brother, Francisco Pascual Ruiz, was born in 1973. He was named after my father. Francisco recently got a PhD in economics from the University of California at San Diego.

**Roberts:** *What is he going to do?*

**Pascual:** He wants to stay in the USA. He defended his thesis in September 2007 and is now looking for a job. He specialized in econometrics, a complex subject which I don't understand.

**Roberts:** *What is your father's full name?*

**Pascual:** Francisco Pascual Jimenez.

**Roberts:** *Your older sister did what?*

**Pascual:** She studied law.

**Roberts:** *Was she ill a long time?*

**Pascual:** She died of lung cancer, and she was only ill for a short time. She was diagnosed in July 2004. She came to BUMC for treatment. She was here for only 2 months. She died in November 2004.

**Roberts:** *Your father was born when?*

**Pascual:** In 1931 and he is alive and well.

**Roberts:** *What was your mother's name and birth date?*

**Pascual:** Pilar, same as my sister. She was born in 1932 and is alive and well.

**Roberts:** *Where do your parents live?*

**Pascual:** In Madrid. They moved to Madrid when my father retired 11 years ago.

**Roberts:** *What is your mother like?*

**Pascual:** She is a very energetic, nice woman. Even though she never went to college, she always tried to teach her daughters that they should pursue a career and be independent.

**Roberts:** *What is your father like?*

**Pascual:** He is a very sweet father. He has always been interested in foreign cultures because he was exposed to art from around the world in his position in customs. He is very interested in Asian art, history, and geography. He has an amazing memory. He remembers everything he has ever read or studied. I would love to have that gift, but I didn't inherit it from him.

**Roberts:** *How did your parents meet?*

**Pascual:** My father had a friend at the university who happened to be my mother's brother, my uncle.

**Roberts:** *Your mother must have been a little hesitant to move to Ceuta.*

**Pascual:** At the beginning, she thought it would be a very exotic move. She loved Ceuta in the beginning. It was a small town as opposed to Madrid. She found it very easy to raise children there. She immediately found some very good friends.

**Roberts:** *What was your home like?*

**Pascual:** We lived like most people in Spain do. We lived in a relatively large flat in the middle of the city, only 5 minutes from school. We walked everywhere. We were 2 minutes from the ocean.

**Roberts:** *Did you and your sisters share a bedroom?*

**Pascual:** I always roomed with one of my sisters, most of the time with my older sister, Pilar. My brother had his own room.

**Roberts:** *Were there a lot of books around your house?*

**Pascual:** Yes. There were always books. My parents loved to read and taught us very early on that it was a pleasure to read. At that time TV in Spain was not that accessible. We always had a TV but it was only available 2 hours in the middle of the day and my parents never allowed us to watch TV at night. Our main hobby was reading.

**Roberts:** *What did you enjoy reading?*

**Pascual:** I read everything. I used to like very much Spanish short stories and British series for teenagers.

**Roberts:** *Do you read fast?*

**Pascual:** Yes.

**Roberts:** *Was dinner a big deal in your house growing up?*

**Pascual:** The big meal is lunch in Spain. It was always a big deal. We would go to school in the morning, come home at 1:30 or 2:00 PM for lunch, and afterwards go back to school. My father would do the same—come home from work, have lunch, and then go back to work.

**Roberts:** *Lunch was 1½ hours?*

**Pascual:** Approximately.

**Roberts:** *Did you have an active dialogue during lunch?*

**Pascual:** Yes. We loved to talk during meals. We had long meals and long discussions.

**Roberts:** *What did you discuss mainly?*

**Pascual:** Anything and everything.

**Roberts:** *Politics?*

**Pascual:** Yes, more as we got older. We discussed what happened at school. My father told us stories about the incidents at the border with Morocco. He would tell us stories he had recently read. They were always interesting discussions.

**Roberts:** *Your father is the dominant figure in your family?*

**Pascual:** I would say my parents were both dominant. My father is not very outspoken. He is a very pleasant man. My mother is quite outspoken. She has an opinion on everything.

**Roberts:** *Did school come easy for you? Did you have to study much?*

**Pascual:** School was very easy for me, and I enjoyed it very much.

**Roberts:** *You went to Catholic schools?*

**Pascual:** Yes. I attended an all-girls Catholic school, which was run by nuns, until I was 16. I then moved to Madrid to study 1 year of preuniversity. My sister had done the same thing, so I joined my sister and we were in a Catholic university that particular year. Then, I moved to medical school. I entered medical school when I was 17. That was the Universidad Complutense.

**Roberts:** *Were there any teachers in grammar school, junior high, or high school who had a major influence on you? How did you get interested in medicine? Did you enjoy science?*

**Pascual:** I enjoyed science very much. I had the same science teacher from age 12 to 16, and she was a very important figure in my inclination towards science.

**Roberts:** *Were there any physicians in your family?*

**Pascual:** Yes, a cousin, 2 years older. He was the first family member to enter medical school.

**Roberts:** *Did your parents come from large families?*

**Pascual:** No. My father has only one sister, and my mother has two brothers.

**Roberts:** *Do they live in Madrid also?*

**Pascual:** My father's sister still lives in Ceuta. One of my mother's brothers lives in Madrid and the other on the Canary Islands—the other Spanish enclave in Africa. Growing up, I had only my aunt, but she had five children.

**Roberts:** *Those cousins were about the same age as you and your siblings?*

**Pascual:** Exactly the same age. My aunt had a boy the same year that my brother was born.

**Roberts:** *Did all of your siblings do well in school? Did your parents push you to excel?*

**Pascual:** Not entirely. My younger sister never liked to study too much. She never went to university. My older sister and my brother, in contrast, are very academically oriented.

**Roberts:** *The first time you went to coed school was when you went to Madrid for university?*

**Pascual:** Yes.

**Roberts:** *You graduated from high school at age 16? How big was your school? What do you call your high school?*

**Pascual:** In my time, elementary school was for students aged 5 to 10 and *bachiller*, for students aged 11 to 16. Subsequently, the system has changed, and it is now closer to the American system.

**Roberts:** *When you were growing up, did your family go on vacations periodically?*

**Pascual:** Every year.

**Roberts:** *For how long?*

**Pascual:** Official vacation in Spain is 4 weeks. We would always take 1 month together and drive to Madrid because my maternal grandparents lived there. From Madrid we would go to Santander to visit my maternal great-grandmother and then we would take 7 to 10 days to discover a new place.

**Roberts:** *You drove everywhere?*

**Pascual:** Yes, we drove everywhere. My father did the driving.

**Roberts:** *It seems like you had a very pleasant childhood.*

**Pascual:** Yes.

**Roberts:** *Your parents got along very well?*

**Pascual:** Yes. Like every couple, they had their moments, but they have been married for 51 years.

**Roberts:** *Your family, I gather, was quite religious?*

**Pascual:** We were raised in the Catholic tradition.

**Roberts:** *You went to Mass every Sunday?*

**Pascual:** Yes.

**Roberts:** *Did your mother or father smoke cigarettes?*

**Pascual:** Both smoked when I was growing up. My father quit when I was a young girl. My mother quit when she got pregnant with my brother.

**Roberts:** *Your older sister smoked?*

**Pascual:** Yes.

**Roberts:** *Did you ever smoke cigarettes?*

**Pascual:** No. I was never attracted to cigarettes. I saw how difficult it was for my mother to quit when she got pregnant, and I decided to never get into it.

**Roberts:** *Was there alcohol in your home growing up?*

**Pascual:** There was red wine, absolutely. Even for us children. We would drink red wine for lunch, diluted with sparkling water. My father would drink a beer occasionally. My mother never drank alcohol.

**Roberts:** *You would get home from school, which was only 5 minutes away, around 2:00 PM?*

**Pascual:** Yes, and we would have lunch at 3:00 PM. Normally weekdays it was only an hour. Then by 4:30 or 5:00 we would go back to school until 7:00 PM.

**Roberts:** *What kind of activities would you have after you got home from school?*

**Pascual:** We were always engaged in extracurricular activities. I took classical guitar.

**Roberts:** *Do you play now?*

**Pascual:** No. My sisters and I took ballet. We took French language classes. We were always busy with extracurricular activities.

**Roberts:** *They would start around 7:00 PM?*

**Pascual:** Depending on the day: sometimes from 6:00 until 9:00 PM. Then we would go home and have dinner around 10:00 PM.

**Roberts:** *It wasn't a big dinner?*

**Pascual:** Correct. A small dinner.

**Roberts:** *When did you do homework?*

**Pascual:** We didn't have activities every day of the week: 2 days of ballet, 2 days of guitar, and maybe 1 day of something else. We didn't have a lot of homework. Also, in the middle of the day we had time before and after meals to do homework.

**Roberts:** *What time did you go to sleep?*

**Pascual:** 11:00 PM normally.

**Roberts:** *What time did you get up?*

**Pascual:** School started at 9:00 AM, so we didn't get up until 8:00.

**Roberts:** *Were you involved in other hobbies or activities?*

**Pascual:** I liked sports very much. I enjoyed tennis and sailing. It was a nice place to sail. I swam a lot in the summers.

**Roberts:** *In the ocean?*

**Pascual:** Yes, the ocean, but I would do it also as a sport. We had swimming lessons and swimming races.

**Roberts:** *Did you go out on the beach?*

**Pascual:** Yes, especially on weekends. My parents would take us to the beaches in Morocco almost every weekend. The beaches in between Ceuta and Tangier are absolutely beautiful with very fine yellow sand.

**Roberts:** *You went to college for 1 year in Madrid before starting medical school?*

**Pascual:** Yes. That was a preuniversity year at the San Pablo Centro de Estudios Universitarios.

**Roberts:** *When you went there you knew you wanted to go to medical school?*

**Pascual:** No. The preuniversity year is called "Course for University Degree Orientation." It was the only academic year that the students could choose subjects to help decide on career choices. Then each student had to apply to a university for the chosen career. I chose medical school. When I went to Madrid, my two main interests were physics and medicine. I was always interested in atomic physics. I read books when growing up about the discovery of the atom, and they made an impression on me. I considered physics as a career.

**Roberts:** *Do you think you made the right decision?*

**Pascual:** I never regretted the decision I made.

**Roberts:** *How many students were in your high school?*

**Pascual:** Probably about 45 to 50 per year.

**Roberts:** *When you finished high school, did they rank you in your class?*

**Pascual:** I was either first or second. My best friend was either first or second with me.

**Roberts:** *Was it hard to get into the preuniversity in Madrid?*

**Pascual:** No, not for me because I had very good grades.

**Roberts:** *How many students were there?*

**Pascual:** In the preuniversity in my class, there were probably no more than 50 or 60. But there were other groups of similar size. The total for that year was 200 students.

**Roberts:** *It was a private Catholic university?*

**Pascual:** Yes. San Pablo—St. Paul.

**Roberts:** *How did you react coming from a town of 50,000 to Madrid, which had a population of several million?*

**Pascual:** I loved it. For one thing, I knew Madrid very well. My maternal grandparents lived there and we went there every year. My sister, Pilar, had already gone to Madrid the previous year. I just joined her. She was at the same college, San Pablo. She had already told me everything about it. We shared a room in the dormitory, so for me it was an easy transition. I loved all the cultural activities of Madrid. The time was 1974 to 1975, the year that Franco died. Madrid was a very alive city, both politically and culturally. It was a very interesting place to be at age 17.

**Roberts:** *What was the population of Madrid at that time?*

**Pascual:** Between 3 and 4 million people.

**Roberts:** *Did any teachers there influence you?*

**Pascual:** Yes, my physics teacher and chemistry teacher.

**Roberts:** *You spoke Spanish in your home and took French in high school. When did you learn to speak English?*

**Pascual:** I started learning English in medical school. We had textbooks that were only in English. Medical English was quite easy to understand. I realized that English was going to be a very important language in my career, so during medical school I went to England during the summers for a month to go to school. I studied English more and more seriously.

**Roberts:** *Was it easy to get into medical school?*

**Pascual:** For me it was easy. The year I started medical school was the year that Spain introduced the "selectivity exam," which everyone had to take to go to university. Before that there was no national test. I took the exam and did well.

**Roberts:** *Do you have any idea how many people applied to your medical school?*

**Pascual:** I don't have those numbers. In Spain, even today, it is much easier to get into medical school than to get into a residency program. The latter is very tough.

**Roberts:** *How many were in your medical school class? You began medical school in 1976?*

**Pascual:** In the Complutense Universidad, there were probably close to 400 per year. The first 2 years of my medical school were done at the San Pablo College: professors from the Complutense University held classes there. The classes contained 70 or 80 students.

**Roberts:** *Were the colleges close together?*

**Pascual:** No, they were a good distance apart.

**Roberts:** *How did you get around in Madrid?*

**Pascual:** I took the bus or the metro.

**Roberts:** *During those first 2 years, how many of the classes actually concerned medicine?*

**Pascual:** Medical school in Spain is 6 years. The first 2 years are the very basic courses, just like in the USA: mathematics, physics, chemistry, biology. In the third year of medical school we had pathology, microbiology, and subjects more related to medicine. I took anatomy and physiology the first year. We had 2 full years of anatomy.

**Roberts:** *Did you enjoy medical school from the beginning?*

**Pascual:** Yes. It was pretty much what I was expecting. My favorite subject was pathology. The third year was a highlight, because I loved pathology.

**Roberts:** *Did you find that you had to study more when you entered medical school, or did it seem to just flow?*

**Pascual:** I was used to studying very hard, so it was just a little more but not overwhelming.

**Roberts:** *In your last years of medical school, as you started rotating through internal medicine, pediatrics, surgery, radiology, and other specialties, did you decide fairly quickly what you wanted to go into?*

**Pascual:** No. I always knew I was not going to be a surgeon. That was clear from the beginning.

**Roberts:** *Why is that?*

**Pascual:** I was not attracted to surgery. I never thought that I had enough skills to do it well. I was very attracted by pathology. Among the clinical specialties, I preferred pediatrics over internal medicine. My two options were pathology and pediatrics.

**Roberts:** *How did you choose?*

**Pascual:** It was chosen for me. As mentioned, the main bottleneck in Spain is the entry into residency. When I finished medical school in 1981, there were 20,000 applicants for 2000 residency positions. We had to take another national exam. I took it and got a pretty good score. At the time I thought I wanted to do pathology in Madrid in a very good hospital. They asked everyone who had passed the test (the first 2000 positions) to come to an auditorium and then the first-place applicant chose the specialty and hospital and then the second person and so on. You had to be there to choose. Pathology was not a very sought-after specialty, so I was convinced I would end up in the hospital and the position I wanted. Then, when I selected my choice, a gentleman said that the pathology positions were taken. I couldn't understand how that could be. The pathology positions had been filled the previous year by servicemen who had reserved residency positions because of their mandatory military obligations. Thus, I chose pediatrics and found a very good opening in a hospital in Madrid.

**Roberts:** *What was the hospital where you did your medical school training in Madrid?*

**Pascual:** It was a very nice Catholic hospital, very traditional with very old buildings, run by the nuns. Pediatrics was one of the highlights. A professor of pediatrics in medical school, who was a great man, was at this hospital. I enjoyed it very much.

**Roberts:** *How big was the hospital?*

**Pascual:** It was a general hospital of about 400 beds.

**Roberts:** *How many of those were pediatrics?*

**Pascual:** About 30 or 40 beds.

**Roberts:** *Did you have an internship and residency, or what did they call it?*

**Pascual:** Residency was 4 years, with first-, second-, third, and fourth-year residents. My residency was at one of the major hospitals in Madrid, the "12 de Octubre" Hospital.

**Roberts:** *That's a lot of training. Was all of that in general pediatrics?*

**Pascual:** Fourth-year residents could choose an elective for the whole year. I chose pediatric gastroenterology.

**Roberts:** *You enjoyed your residency?*

**Pascual:** Yes I did, very much.

**Roberts:** *What attracted you to gastroenterology at the time?*

**Pascual:** Liver diseases fascinated me. I took care of kids with congenital biliary atresia, and I enjoyed that very much. I wanted to study pediatric gastroenterological diseases. I was also very interested in nutrition. The chief of gastroenterology, Javier Manzanares, also was a superb physician, and he made a big impression on me.

**Roberts:** *What happened after you completed your fourth year of pediatric residency?*

**Pascual:** The hospital in Madrid was starting a program of pediatric liver transplantation, and I decided that I wanted to work in that program. We had very little experience handling immunosuppression in these patients. It was recommended that I go elsewhere to get experience in liver transplantation and then it would be relatively easy to get a hospital position when returning. The year I finished my residency I went to the Children's Hospital in Buffalo, New York, and did a rotation in gastroenterology with Emanuel Lebenthal. He was also editor of the *Journal of Pediatric Gastroenterology and Nutrition*. I wrote to him. He accepted me as a visiting resident, and I did 4 months with him and enjoyed it very much. Then I went back to Spain.

**Roberts:** *Was that the first time you had ever been in the USA?*

**Pascual:** No. During two summers in medical school I went to California as an exchange student.

**Roberts:** *Where?*

**Pascual:** Laguna Beach. It was great. I lived there with my older sister. I did a rotation and decided that I would train in the USA.

Marriage brought me to Dallas. My husband, who was also a pediatrician, wanted to come to Children's Hospital in Dallas to do a 1-year fellowship with George McCracken and John Nelson, codirectors of the pediatric infectious diseases division. They were also the editors of the *Journal of Pediatric Infectious Diseases*. The Children's Hospital in Dallas also had a large pediatric liver transplant program. I interviewed and was offered a 1-year fellowship. I got some support from Spain to do this fellowship.

**Roberts:** *When did you get married?*

**Pascual:** In 1987, right before we left Madrid.

**Roberts:** *You both went to Buffalo, New York, together?*

**Pascual:** No, I did that by myself.

**Roberts:** *But then you both came to Dallas. What happened that year?*

**Pascual:** I came to Children's Hospital. There were only two attendings in the pediatric gastroenterology program, and they were so overwhelmed that they did not seem to enjoy what they were doing. They had many patients, most of them with complex problems. I found myself involved with two very stressed gastroenterologists. I explained my dissatisfaction to some fellows at Children's, and I was told that I didn't have to stay there. Children's Hospital was not paying my salary; my salary was coming from Spain. The opportunity for basic research was presented to me. I asked myself, "Why should I do research?"

**Roberts:** *You had never done any research before?*

**Pascual:** Correct. I had not done any research in my life! Why should I try to do that now? The fellows gave me an explanation that I liked. They said once you learn the basics, like Western blots, etc., you would be much less intimidated by science. I thought about it and said they were absolutely right. I had nothing to lose. I was already very impressed with UTSWMC. My fellow colleagues introduced me to a mentor. I ended up in the office of Don Capra, who was a full professor of microbiology, and he had a big lab with 25 people. Capra asked me, “Why do you want to do research? What are you expecting?” I said, “I need some basic science and I will eventually return to my country.” He understood that I had had no experience in research. I had been told that Dr. Capra believed that physicians could do good research even without previous experience. He said, “My best experiences in research have been with MDs, and I would be happy to take you.”

**Roberts:** *This was in October 1987?*

**Pascual:** Yes.

**Roberts:** *That was a major turning point in your professional career.*

**Pascual:** Absolutely. Don said, “Yes, come, especially if I don’t have to pay your salary. What do I have to lose?” A Spanish postdoctoral fellow was finishing his training in June 1988, and Don said I should work with him: “He has done well. You may learn a lot. He is a very smart person.” By December 1987, I was completely captivated by what I was doing. I was in the lab from 9:00 AM until 11:00 PM every day of the week.

**Roberts:** *What were you doing?*

**Pascual:** I was trying to clone genes encoding the variable regions of human autoantibodies. I was very lucky because in 1987, polymerase chain reaction (PCR) had just been discovered, and PCR machines started to be available. My mentor, Don Capra, got one of the first PCR machines at UTSWMC. He basically gave it to me and said, “Make it work.” It was easy to work with PCR and so exciting. Very quickly I was able to clone genes in a very efficient manner. I was very fortunate because it gave me confidence that I could do molecular biology. It was something I really enjoyed doing. I never looked back at gastroenterology or anything else until 2 or 3 years later when I realized that I was missing patients. I was so immersed in basic research.

**Roberts:** *You stayed with Don Capra for 10 years?*

**Pascual:** Yes (Figure 5).

**Roberts:** *But in 3 years you realized you were missing being with the patients. What happened?*

**Pascual:** In those 3 years I was successful and published quite a good number of articles. Don was a great mentor. He gave me a lot of confidence in myself. By 1992, I had obtained a semifaculty position: research assistant professor, which was pretty quick for somebody who didn’t have a PhD or previous



**Figure 5.** At the retirement symposium for her mentor, Dr. J. Donald Capra, in Oklahoma City, April 2007. Left to right: Dr. Max Cooper, Dr. Jacques Banchereau, Dr. Capra, Dr. Roger Perlmutter, Dr. Tasuko Honjo, and Dr. Mike Carroll.

basic research experience. After 3 years Don was asking me about my future. “Do you want to be exclusively a basic investigator, or do you want to combine this with being a clinician?” I wanted both, to be a “physician scientist.”

To be a clinician in the USA, I had to get accredited and probably do a fellowship. (I had passed the ECFMG test before I came to the USA in 1986.) I thought initially about a fellowship in pediatric gastroenterology, but the laboratory work I was doing with Don involved the immune system and cloning genes, and I liked it very much. I thought if I was going to have a specialty that had something to do with my basic research it was either pathology or rheumatology. I got in touch with the head of the pediatric rheumatology division, Chester Fink, and he accepted me in a fellowship. Dr. Fink liked the idea of having someone already trained in research as a fellow in rheumatology.

**Roberts:** *How long was the fellowship?*

**Pascual:** Three years. To promote me quickly to assistant professor and to get my licensing fixed up, I needed some time as a pediatric resident. I was already 35 in 1992; I couldn’t waste much time. The chairman of pediatrics, Chuck Ginsburg, made it easy for me. During the 36 months of fellowship, 8 months were spent as a resident in pediatrics at Children’s Hospital. I was on call every fourth night. I was an intern for a month, and then the remaining 7 months I was a senior resident. It was good to go through the training here. It was so different from my residency in Spain.

**Roberts:** *In what way?*

**Pascual:** Residents in Spain and in many other European countries are on call, staying in the hospital, every fifth or sixth night, but there were always staff attendings in the hospital. When on call in Spain, if I was not confident in managing a patient, I could call a staff physician who would come see a patient with me. At Children’s Hospital in Dallas, residents are

on their own. A senior resident has a bigger responsibility here than in hospitals in Europe. A staff person can be called at home, but that is different than simply knocking on their door.

The other difference is that Children's was the main pediatric hospital in the whole area. The cases I saw the 8 months of residency were amazing compared with those I saw as a resident in Spain for 4 years. I saw many conditions at Children's that I had never seen in Spain. Madrid is a city of 4 million people, but there are six huge pediatric hospitals, so the unusual conditions are all spread out. In Dallas, they are concentrated at Children's Hospital. When you go to the intensive care unit at Children's in Dallas, it's simply amazing the amount of diversity of pathology one sees. It was a very interesting clinical experience to do 8 months of residency at Children's in Dallas.

**Roberts:** *Were you able to keep your research going during your fellowship in rheumatology?*

**Pascual:** My research definitely slowed down during those months, even though Don was always a very generous mentor. He always gave me technicians to work on my project. I also had students working under me so I could be gone. My research wasn't of the intensity that I had before, but it was still a productive time.

**Roberts:** *You finished your fellowship in pediatric rheumatology?*

**Pascual:** Yes. I had two wonderful mentors: Chester Fink, the division head, and Lynn Punaro, both absolutely outstanding clinicians who made me think from the very first day that I had made the right move. I loved getting back to patients, and I love it to this day.

**Roberts:** *You finished your fellowship in 1995. What happened then?*

**Pascual:** I was offered a faculty position: assistant professor of pediatrics and microbiology. I was working with patients and was also keeping my laboratory in the operation of my former mentor, Don Capra. I was happy there. I was able to get some grants, a painful part of research. Then, in 1997, Don Capra decided to move to Oklahoma as the president of the Oklahoma Medical Research Foundation. He asked me to go there with him, but I decided to stay in Dallas. I liked very much the UTSWMC clinical and research environments. However, it started to get a little difficult for me when he left because the microbiology department was not very supportive of me as an investigator. I had to move back to the pediatric department, which did not have any laboratory space. I found myself in an uncomfortable position. I had support from the NIH, but I didn't have the right space to conduct my research.

**Roberts:** *At that time you were head of the pediatric rheumatology division?*

**Pascual:** Yes. Chester Fink had retired. There were only two pediatric rheumatologists for all of northeast Texas, and one of them was me. The two of us took care of a population of over 1500 children with rheumatic diseases. At least 50% of my time was devoted to clinical duties, and then I was trying to continue my research without much support from the medical school.

**Roberts:** *How did it come about that you came to Baylor Dallas?*

**Pascual:** Although I was overwhelmed with clinical work, and although my research was funded by an NIH grant I had acquired, I essentially had no lab. Then Baylor Dallas knocked on my door. Jacques Banchereau had come to Baylor to create a new institute for immunology research. I had collaborated with Jacques since 1992 when he was in France. We had worked together in what I think was one of my most important papers in 1994. In that article (I was first author), we described specific markers that could be used to separate different stages of human mature B cells. We cloned and sequenced the various immunoglobulin genes in all these populations. We showed where the mutations started.

I was delighted that Jacques came to Dallas to lead a new institute for human immunology. When Jacques learned about my situation at UTSWMC, he called me. He said, "We will offer you laboratory space. You can come to this institute and pursue your research here." I thought that was fantastic. Jacques offered me a full lab, whereas UTSWMC was offering me maybe a bench in somebody else's lab. Thus, I took my six people—including postdoctoral fellows (pediatric hematology/oncology, etc.) and technicians—and came to Baylor Dallas. I retained my major appointment as division director at UTSWMC. That was 1998. The joint affiliation worked out very well because Baylor was very supportive. My research blossomed. I was able to publish and get more grants.

**Roberts:** *How did you know Jacques earlier?*

**Pascual:** My mentor, Don Capra, had collaborated with him. He was a consultant also for Jacques' operation in Lyon, France. I met Jacques in 1990 in France at a meeting organized by the Pasteur-Merieux Foundation. Jacques had just published a very important paper in *Nature* and was presenting his work. I also went there to give a talk. In 1992, we initiated our collaboration. I traveled a few times back and forth to his laboratory to get help and learned how to separate the human B cells from the tonsil. In 1993, Jacques came to the microbiology department at UTSWMC for a 3- to 4-month minisabbatical. We became friends.

**Roberts:** *Do you still take care of patients?*

**Pascual:** Yes, at the Scottish Rite Hospital outpatient clinic for pediatric rheumatology.

**Roberts:** *How much time do you spend doing that?*

**Pascual:** I am now full-time at Baylor except for every Wednesday morning, when I attend at that clinic.

**Roberts:** *How has BIIR worked out for you?*

**Pascual:** It has been great. Baylor has been very supportive. As chief of the pediatric rheumatology division at UTSWMC, I was struggling trying to attend to my clinical duties and finding time to do research. Because my research and its funding at Baylor were going well, BUMC agreed to support me full-time if that was my desire. I therefore resigned from UTSWMC in 2004. I have remained at the Texas Scottish Rite Hospital, which is where UTSWMC has its pediatric rheumatology division outpatient clinic. Texas Scottish Rite Hospital is a great institution.

**Roberts:** *What makes it great?*

**Pascual:** It is a wonderful environment. It was founded by the Texas Masons in 1921. Physicians see patients without worrying about who is paying the bill. It cannot be better. It's primarily an orthopedic hospital, so the combination of orthopedics and rheumatology is a wonderful marriage. Occupational and physical therapy divisions are wonderful also.

**Roberts:** *How many beds does that hospital have?*

**Pascual:** Not many. Rheumatology has never had more than four or five patients in the ward at any time, but it has a very large outpatient clinic—3 full days a week. We follow over 1500 children from all over Texas.

**Roberts:** *How much grant support do you have at the moment?*

**Pascual:** I have been very fortunate lately. I have a lot of both NIH and non-NIH grants at the moment. I have a big program project—Center for Lupus Research—which was awarded last year via the Center for Translational Research. One project is done in collaboration with the Rockefeller University in New York. I have very good collaborators there. I am the program director for this big front. I also have other NIH grants to study lupus and juvenile arthritis. I have had a lot of support through the years from the Alliance for Lupus Research. I have a scholarship from the Mary Kirkland Foundation in New York also to study lupus. I also have different contracts with the NIH and contracts with pharmaceutical companies to follow patients with rheumatic diseases who are being treated with new biologicals.

**Roberts:** *How much time do you spend seeking lab support money?*

**Pascual:** A lot of time. Seeking support funds is a never-ending business. The grant is usually for 4 or 5 years, but then it has to be renewed. I am always thinking about how to get or renew the support. Always.

**Roberts:** *Your salary comes from your grants?*

**Pascual:** Yes. I have been successful at covering my salary by grant money.

**Roberts:** *I suspect that you would be greatly relieved if you were on a full-time salary provided by means other than your own grants?*

**Pascual:** Yes, it would really be nice to have that security.

**Roberts:** *What is your age now?*

**Pascual:** 49.

**Roberts:** *How long can you continue this pace?*

**Pascual:** That's a very good question. At this point I am funded for the next 5 years, but then of course renewals will have to come and it's a tough world. So I don't know. The field I study is evolving very fast. Fortunately, I still have a good bit of energy.

**Roberts:** *Of the things you've done, what are you most proud of at this point?*

**Pascual:** I am most proud by far of what I have done since I joined BIIR 10 years ago. We chose to elucidate the basic mechanism of two rheumatic diseases: systemic lupus erythematosus and systemic arthritis.

We have really understood how human diseases like lupus may happen via mediators (i.e., cytokines), and this is helping

us find better therapeutic targets. That's a fascinating part of what I do. I feel so fortunate to be involved in this endeavor. We at BIIR are trying to understand the disease by looking at patients, not by developing animal models of disease.

**Roberts:** *Do you think BIIR will thrive through the years?*

**Pascual:** It is thriving now! We are over 100, and the institute started with 7 people. I think the institute is doing great. It's definitely a wonderful environment in which to work.

**Roberts:** *How many of the 100 people at BIIR are MDs?*

**Pascual:** Of the 100, there are 10 principal investigators on faculty: 3 have MDs and PhDs, and I am an MD. Thus, 4 out of the 10 have medical training.

**Roberts:** *Do you have much contact with clinicians at BUMC?*

**Pascual:** Yes. We are now collaborating with more clinicians at BUMC with an interest in our research programs. We have a lot of collaboration, for example, with Alan Menter, Jack Cush, Joe Fay, and Marvin Stone.

**Roberts:** *How has BIIR been useful to BUMC? It sounds like John Fordtran and Boone Powell Jr. made the right decision and had great vision.*

**Pascual:** BIIR is well recognized around the world as one of the leading institutions in human immunology research. Jacques Banchereau is one of the major experts in human dendritic cell biology. He just published in *Nature* a major review on dendritic cells. This year's Lasker Prize in Medicine recipient, Dr. Ralph Steinman, spoke recently at the tenth anniversary of the BIIR. We have leading world experts in human molecular biology, like Gerard Zurawski. Karolina Palucka is a fantastic investigator in the field of cancer at BIIR. We have a state-of-the-art microarray and bioinformatics facility led by a young investigator, Damien Chaussabel, who is helping us develop very useful tools to understand human immune-mediated diseases. Our work is very well accepted by our peers.

**Roberts:** *Are you surprised that BIIR has been as successful as it has been when unconnected to a medical school?*

**Pascual:** It is an unusual situation. The energy and enthusiasm of our director, Jacques Banchereau, and the support that BUMC has offered definitely contribute to our success as an independent entity.

**Roberts:** *Do you have any more contacts at UTSWMC?*

**Pascual:** Yes, through my clinical duties at the Scottish Rite Hospital. I meet every Wednesday with my colleagues from UTSWMC. I still have research collaborators at Children's Medical Center. I have in my BIIR lab pediatric endocrinology fellows from UTSWMC. Also I trained some of the fellows in the UTSWMC pediatric rheumatology program in my lab. We also collaborate with the pediatric infectious diseases and pediatric endocrinology divisions.

**Roberts:** *Who did you marry in 1987?*

**Pascual:** Dr. Octavio Ramilo.

**Roberts:** *He is a pediatrician too?*

**Pascual:** He is on the pediatric infectious disease faculty at UTSWMC.

**Roberts:** *How long were you married?*



**Figure 6.** At the Texas Scottish Rite Pediatric Rheumatology Clinic with Tim, Paul, and Jacob Prevou—patients she has followed in the clinic for more than 10 years.

**Pascual:** Eighteen years. We have no children.

**Roberts:** *Do you regret that?*

**Pascual:** Yes. Being a pediatrician is a great specialty, however, for someone without children. As a pediatric rheumatologist, I follow my patients for years (*Figure 6*). Pediatric rheumatology is not like pediatric infectious diseases, where the patient is seen once and that's it. I keep in great touch with my patients. But, it's still different from having one's own children. If I were to start again, I would put more emphasis on having children.

**Roberts:** *But you probably wouldn't be where you are from an investigative standpoint?*

**Pascual:** I ask myself that question, and I know really great women scientists who have children, and they have been able to do very well with them.

**Roberts:** *What is your life like now? What time do you get up? What time do you get to work?*

**Pascual:** I am not a morning person. I normally don't start before 9:00 AM, but every day in the lab I'm there until about 8:30 or 9:00 PM.

**Roberts:** *You work half days?*

**Pascual:** Yes, I work half days,

**Roberts:** *Twelve hours!*

**Pascual:** But it's work I absolutely love. It's easy. Then on Wednesday mornings I see rheumatology patients, and I love it. It is the highlight of my week.

**Roberts:** *How much sleep do you need to feel good the next day?*

**Pascual:** I need 7 to 8 hours of good sleep. I am a good sleeper. That is my great advantage.

**Roberts:** *What are your weekends like?*

**Pascual:** I often travel. I go to many places to give talks and attend meetings. When I'm in Dallas, most weekends I am in the office and lab also. There is always something to do. I don't like working at home; I never did. When not in the office, I love movies, music, the symphony or theatre, and cooking for friends. That's basically it.

**Roberts:** *Do you have enough time to read outside of medicine?*



**Figure 7.** With members of her laboratory staff at the Baylor Institute for Immunology Research, November 2007.

**Pascual:** I don't have enough time. I love to read. I'm always reading two or three books.

**Roberts:** *Where do you live now?*

**Pascual:** I live in a high-rise in the Turtle Creek area.

**Roberts:** *Your life is both relatively simple but also complex?*

**Pascual:** Yes. Travel is definitely a big part of my work and my life.

**Roberts:** *How many trips do you go on a year?*

**Pascual:** I am out many weeks. I travel relatively little in the summer months. During the other 9 months, I usually have several trips a month.

**Roberts:** *Do you enjoy traveling?*

**Pascual:** Yes, but most of my travel is work-related. I don't mind traveling.

**Roberts:** *How often do you get back to Europe?*

**Pascual:** Next week will be my sixth trip so far in 2007. One trip was for personal reasons: my father had an operation. In March 2007, I went to Paris for a meeting of the Pasteur Institute; in April, to Italy for a meeting near Bologna; in June, to Barcelona for the European rheumatology meeting; in September, to Paris for the thesis defense of one of my students.

**Roberts:** *Do you ever want to live in Spain again?*

**Pascual:** Not during my professional life. It would be difficult for me to do in Spain what I do here. I don't think I will go back before retiring, but once I retire, who knows.

**Roberts:** *Do you enjoy Dallas?*

**Pascual:** Yes.

**Roberts:** *Do you enjoy living in Turtle Creek?*

**Pascual:** Yes. I don't have to worry about traffic.

**Roberts:** *There are 260 Mondays through Fridays each year. How many days are you out of Dallas?*

**Pascual:** My trips are usually very short. I went to Columbia University yesterday to give a talk in New York City. I arrived at noon and came back via the first plane the next morning. My next two trips to New York are 1-day trips as well. I have a lab with 15 people (*Figure 7*), so I need to be around as much as possible.

**Roberts:** *Have you given a talk at medical grand rounds at BUMC?*

**The Uehara Memorial Foundation Symposium 2005**  
**The Innate Immune System: Strategies for Disease Control**  
 July 11–13 2005 Tokyo, Japan



**Figure 8.** At the Uehara Foundation Symposium in Tokyo, 2005 (first row, fifth from the right).

**Pascual:** No. I have done the “Focus on Research” conference at BUMC. I would be delighted. I gave internal medicine grand rounds at other institutions, though.

**Roberts:** *How much vacation do you have a year?*

**Pascual:** I take very little vacation. Next week I am going to Spain for personal reasons (to visit my parents and my sister). I leave on Thursday and come back the next Wednesday. That is 1 week of personal travel. I know I have to take off more time, and the older I get the more important it is to really get out of work and have time for myself.

**Roberts:** *What is your favorite place to go if you had to pick one or two places?*

**Pascual:** I love Asia. Japan is an example (Figure 8). I like the Japanese people, their food, and their culture. I was impressed during a short trip to China this year as well. But there are so many exciting places in the world!

**Roberts:** *Dr. Pascual, thank you for your openness. It has been a pleasure getting to know you a bit.*

**Pascual:** Thank you. It has been my pleasure.

**VP'S BEST PUBLICATIONS AS SELECTED BY HER**

*(Publications are numbered according to her curriculum vitae.)*

**Original research**

3. Regueiro JR, Arnaiz-Villena A, Ortiz de Landázuri M, Martín Villa JM, Vicario JL, Pascual-Ruiz V, Guerra-García F, Alcami J, López-Botet M, Manzanera J. Familial defect of CD3 (T3) expression by T cells associated with rare gut epithelial cell autoantibodies. *Lancet* 1986;1(8492):1274–1245.
5. Pascual V, Randen I, Thompson K, Sioud M, Forre O, Natvig J, Capra JD. The complete nucleotide sequences of the heavy chain variable regions of six monospecific rheumatoid factors derived from Epstein-Barr virus-transformed B cells isolated from the synovial tissue of patients with rheumatoid arthritis. Further evidence that some autoantibodies are unmutated copies of germ line genes. *J Clin Invest* 1990;86(4):1320–1328.
7. Pascual V, Victor K, Lelsz D, Spellerberg MB, Hamblin TJ, Thompson KM, Randen I, Natvig J, Capra JD, Stevenson FK. Nucleotide sequence analysis of the V regions of two IgM cold agglutinins. Evidence that the VH4-21 gene segment is responsible for the major cross-reactive idiotype. *J Immunol* 1991;146(12):4385–4391.
12. Pascual V, Victor K, Spellerberg M, Hamblin TJ, Stevenson FK, Capra JD. VH restriction among human cold agglutinins. The VH4-21 gene segment

is required to encode anti-I and anti-i specificities. *J Immunol* 1992;149(7):2337–2344.

13. Pascual V, Victor K, Randen I, Thompson K, Steinitz M, Forre O, Fu SM, Natvig JB, Capra JD. Nucleotide sequence analysis of rheumatoid factors and polyreactive antibodies derived from patients with rheumatoid arthritis reveals diverse use of VH and VL gene segments and extensive variability in CDR-3. *Scand J Immunol* 1992;36(2):349–362.
15. Randen I, Brown D, Thompson KM, Hughes-Jones N, Pascual V, Victor K, Capra JD, Forre O, Natvig JB. Clonally related IgM rheumatoid factors undergo affinity maturation in the rheumatoid synovial tissue. *J Immunol* 1992;148(10):3296–3301.
21. Potter KN, Li Y, Pascual V, Williams RC Jr, Byres LC, Spellerberg M, Stevenson FK, Capra JD. Molecular characterization of a cross-reactive idiotope on human immunoglobulins utilizing the VH4-21 gene segment. *J Exp Med* 1993;178(4):1419–1428.
22. Pascual V, Cha S, Gershwin ME, Capra JD, Leung PS. Nucleotide sequence analysis of natural and combinatorial anti-PDC-E2 antibodies in patients with primary biliary cirrhosis. Recapitulating immune selection with molecular biology. *J Immunol* 1994;152(5):2577–2585.
23. Pascual V, Liu YJ, Magalski A, de Bouteiller O, Banchereau J, Capra JD. Analysis of somatic mutation in five B cell subsets of human tonsil. *J Exp Med* 1994;180(1):329–339.
29. Wilson PC, de Bouteiller O, Liu YJ, Potter K, Banchereau J, Capra JD, Pascual V. Somatic hypermutation introduces insertions and deletions into immunoglobulin V genes. *J Exp Med* 1998;187(1):59–70.
32. Wilson PC, Wilson K, Liu YJ, Banchereau J, Pascual V, Capra JD. Receptor revision of immunoglobulin heavy chain variable region genes in normal human B lymphocytes. *J Exp Med* 2000;191(11):1881–1894.
33. Wise CA, Bennett LB, Pascual V, Gillum JD, Bowcock AM. Localization of a gene for familial recurrent arthritis. *Arthritis Rheum* 2000;43(9):2041–2045.
34. Frazer JK, Jackson DG, Gaillard JP, Lutter M, Liu YJ, Banchereau J, Capra JD, Pascual V. Identification of centerin: a novel human germinal center B cell-restricted serpin. *Eur J Immunol* 2000;30(10):3039–3048.
35. Arce E, Jackson DG, Gill MA, Bennett LB, Banchereau J, Pascual V. Increased frequency of pre-germinal center B cells and plasma cell precursors in the blood of children with systemic lupus erythematosus. *J Immunol* 2001;167(4):2361–2369.
36. Blanco P, Palucka AK, Gill M, Pascual V, Banchereau J. Induction of dendritic cell differentiation by IFN-alpha in systemic lupus erythematosus. *Science* 2001;294(5546):1540–1543.
39. Bennett L, Palucka AK, Arce E, Cantrell V, Borvak J, Banchereau J, Pascual V. Interferon and granulopoiesis signatures in systemic lupus erythematosus blood. *J Exp Med* 2003;197(6):711–723.
41. Jeco G, Palucka AK, Blanck JP, Chalouni C, Pascual V, Banchereau J. Plasmacytoid dendritic cells induce plasma cell differentiation through type I interferon and interleukin 6. *Immunity* 2003;19(2):225–234.
42. Stichweh DS, Punaro M, Pascual V. Dramatic improvement of pyoderma gangrenosum with infliximab in a patient with PAPA syndrome. *Pediatr Dermatol* 2005;22(3):262–265.
44. Palucka AK, Blanck JP, Bennett L, Pascual V, Banchereau J. Cross-regulation of TNF and IFN-alpha in autoimmune diseases. *Proc Natl Acad Sci U S A* 2005;102(9):3372–3377.
45. Yurasov S, Wardemann H, Hammersen J, Tsuiji M, Meffre E, Pascual V, Nussenzweig MC. Defective B cell tolerance checkpoints in systemic lupus erythematosus. *J Exp Med* 2005;201(5):703–711.
46. Pascual V, Allantaz F, Arce E, Punaro M, Banchereau J. Role of interleukin-1 (IL-1) in the pathogenesis of systemic onset juvenile idiopathic arthritis and clinical response to IL-1 blockade. *J Exp Med* 2005;201(9):1479–1486.

48. Yurasov S, Tiller T, Tsuiji M, Velinzon K, Pascual V, Wardemann H, Nussenzweig MC. Persistent expression of autoantibodies in SLE patients in remission. *J Exp Med* 2006;203(10):2255–2261.
49. Chaussabel D, Allman W, Mejias A, Chung W, Bennett L, Ramilo O, Pascual V, Palucka AK, Banchereau J. Analysis of significance patterns identifies ubiquitous and disease-specific gene-expression signatures in patient peripheral blood leukocytes. *Ann N Y Acad Sci* 2005;1062:146–154.
53. Allantaz F, Chaussabel D, Stichweh D, Bennett L, Allman W, Mejias A, Ardura M, Chung W, Wise C, Palucka K, Ramilo O, Punaro M, Banchereau J, Pascual V. Blood leukocyte microarrays to diagnose systemic onset juvenile idiopathic arthritis and follow the response to IL-1 blockade. *J Exp Med* 2007;204(9):2131–2144.

## Chapters and reviews

1. Pascual V, Capra JD. Human heavy chain genes and autoimmunity. In Osterhaus ADME, Uytdehaag FGCM, eds. *Idiotypic Networks in Biology and Medicine*. Amsterdam: Elsevier Science Publishers BV, 1990:27–35.
3. Pascual V, Capra JD. Human immunoglobulin heavy-chain variable region genes: organization, polymorphism, and expression. *Adv Immunol* 1991;49:1–74.
6. Pascual V, Capra JD. B-cell superantigens? *Curr Biol* 1991;1(5):315–317.
8. Pascual V, Capra JD. VH4-21, a human VH gene segment overrepresented in the autoimmune repertoire. *Arthritis Rheum* 1992;35(1):11–18.
11. Pascual V, Capra JD. Immunoglobulin heavy chain variable region gene usage in human autoimmune diseases. In Aledort LM, Hoyer LW, Lusher JM, Reisner HM, White GC III, eds. *Inhibitors to Coagulation Factors* [Advances in Experimental Medicine and Biology, vol 386]. New York: Plenum Publishing, 1995:133–140.
14. Potter KN, Li Y, Pascual V, Capra JD. Staphylococcal protein A binding to VH3 encoded immunoglobulins. *Int Rev Immunol* 1997;14(4):291–308.
18. Wilson P, Liu YJ, Banchereau J, Capra JD, Pascual V. Amino acid insertions and deletions contribute to diversify the human Ig repertoire. *Immunol Rev* 1998;162:143–151.
19. Palucka AK, Banchereau J, Blanco P, Pascual V. The interplay of dendritic cell subsets in systemic lupus erythematosus. *Immunol Cell Biol* 2002;80(5):484–488.
21. Pascual V, Banchereau J, Palucka AK. The central role of dendritic cells and interferon-alpha in SLE. *Curr Opin Rheumatol* 2003;15(5):548–556.
22. Banchereau J, Pascual V, Palucka AK. Autoimmunity through cytokine-induced dendritic cell activation. *Immunity* 2004;20(5):539–550.
23. Stichweh D, Arce E, Pascual V. Update on pediatric systemic lupus erythematosus. *Curr Opin Rheumatol* 2004;16(5):577–587.
27. Pascual V, Palucka K, Banchereau J. Role of innate immunity cytokines in systemic lupus and systemic onset arthritis. In Taniguchi M, Akira S, Nakayama T, eds. *The Innate Immune System: Strategies for Disease Control* [International Congress Series 1285]. Elsevier, 2005:50–54.
29. Banchereau J, Pascual V. Type I interferon in systemic lupus erythematosus and other autoimmune diseases. *Immunity* 2006;25(3):383–392.
30. Pascual V, Farkas L, Banchereau J. Systemic lupus erythematosus: all roads lead to type I interferons. *Curr Opin Immunol* 2006;18(6):676–682.
31. Ueno H, Klechevsky E, Morita R, Asford C, Cao T, Matsui T, Di Pucchio T, Connolly J, Fay JW, Pascual V, Palucka AK, Banchereau J. Dendritic cell subsets in health and disease. *Immunol Rev* 2007;219:118–142.